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# THE OPHTHALMIC RECORD

A Monthly Review of the Progress  
of Ophthalmology

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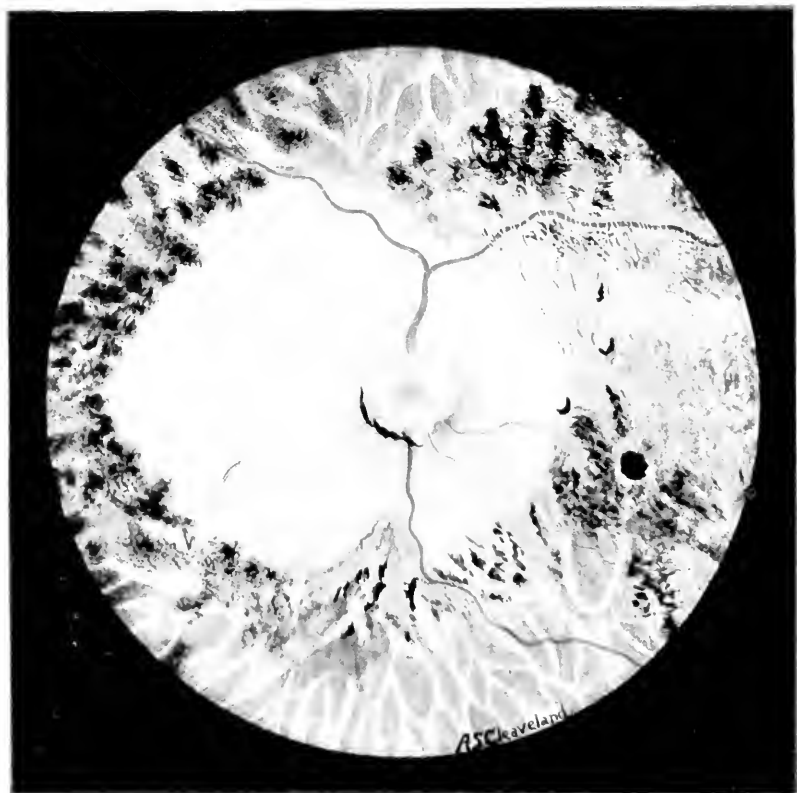
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Dr. E. C. Ellett's case of Retinitis Proliferans with Pigmentation.

# THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS  
OF OPHTHALMOLOGY

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VOL. XIX

CHICAGO, JANUARY, 1910

NO. 1, NEW SERIES

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## A CASE OF RETINITIS PROLIFERANS WITH PIGMENTATION, FOLLOWING HEMORRHAGE FROM THE BOWEL.

BY E. C. ELLETT, M. D.,

MEMPHIS, TENNESSEE.

(Illustrated.)

The patient whose case I present came under my professional notice for the first time in 1903, he being then 37 years old, married, and the father of two healthy children. I had known him many years, and knew him to be a man of convivial habits, who drank a liberal amount of whisky every day, and had, when single, indulged in occasional "sprees." The latter were very infrequent since about 1896, but up to a short time before his death he took ten or twelve drinks of whisky a day. He was greatly troubled with symptoms of indigestion, in spite of which he ate imprudently and followed the meal with teaspoonful doses of bicarbonate of soda.

Two or three years before I saw him he had passed a kidney stone, at which time there was no evidence of any disease of the kidney itself. At the time of his visit to me he reported a recent hemorrhage from the bowels amounting to a teacup full. His physician is sure that this hemorrhage was from the bladder or pelvis of the kidney, i. e., that it was passed from the urethra, and in the shape of small and frequent passages, but the patient's statement to me was that it was from the bowel. He was confined to bed three weeks with this attack, was much prostrated and exceed-

ingly nervous as the result of it. A few days after the hemorrhage, when he began to notice things, he found that the vision of his left eye was blurred. It was for this symptom that I saw him in January, 1903. The vision and refraction were:

R.=20/30—.15. Ax.  $180^{\circ}$ =20/20 and J:-

L.=20/60 unimproved. J.S.

No cause could be seen with the ophthalmoscope for the obscured vision. With dilated pupil the eye ground was carefully examined for hemorrhage, exudation or edema, and none were seen. These conditions were present in my mind, and would not, I think, have been overlooked. On Feb. 2d. examination of the eye grounds was still negative, fields normal and vision as before.

He then went to the gulf coast for a rest, and I referred him to Dr. Bruns, of New Orleans, for advice. In a note dated Feb. 13, 1903, Dr. Bruns wrote me of finding retinal hemorrhage and exudation, vn. 20/30 and 20/C, and added that the case seemed a rather mild one of its kind. He attributed the trouble to the loss of blood. In a recent note Dr. Bruns states that the retinal changes were along the superior temporal vessels and in the macular region, and the history given to him was of a hemorrhage from the bowels. In May, 1903, vision O. S. 20/C.—1.00  $\square$ —.50 Ax.  $180^{\circ}$ =20/30 M. best to the temporal side. At that time a whitish area, like exudation, was seen all around the disk, and at a little distance from it. This area was striated in the retina, covered some of the retinal vessels and was not pigmented. Nerve and vessels normal. In Nov., 1907, the vision O. S. was perception of moving objects, and the ophthalmoscopic appearances were about as indicated in the drawing, which was made in Feb., 1908. I did not see the patient again professionally. In Feb., 1909, he began to suffer from uremic symptoms, the urinalysis then showing evidences of an acute exacerbation of a chronic interstitial nephritis. In August, 1909, the patient died in a uremic convulsion.

The ophthalmoscopic findings, which constitute the excuse for reporting this case, were as follows:

O. S. The media are clear, refraction low myopia. The disk is round, very pale pink, with white vessel entrance and blurred edges. A thin pale crescent with pigmented edges is seen to the nasal side. Down and in at the edge of the disk some short pig-

ment lines can be made out, which cover the retinal vessels as they leave the disk. All the retinal vessels are much narrowed and without reflex. The arteries are very narrow; only the larger ones can be traced off the disk, and they are soon lost. Following the apparent course of the descending nasal artery after its disappearance, a whitish band is seen to appear 2 d. d. from the disk, and is seen for  $\frac{1}{2}$  d. d. It is lined partly on both sides by a strip of black pigment. The descending temporal artery is more easily followed as a white non-vascular band, to where it merges, down and out, with some of the white lace-like formation to be mentioned. The temporal veins are only given off after the main trunk has passed upward 1 d. d. from the disk. Just where this trunk passes from the disk it undergoes a distinct widening, evidently due to the pressure of a sclerosed and invisible artery. The appearance of the disk is that of post neuritic atrophy. The most conspicuous feature of the eye ground is a ring from one to three d. d. wide which surrounds the disk at a distance from it of from one d. d. nasally to two and one-half d. d. temporally. This ring is composed of two elements, first a whitish lace-like formation, and secondly pigment. The lace-like formation is well described by the name, and looks as if a lace collar had been laid on the eye ground around the disk. The apertures are more plainly seen on the side of the ring toward the disk, and through them the normal red of the fundus shows here and there. In many places this has the appearance as if the white figures were pressed down on the fundus, which projects slightly into the apertures. The appearance of the white bands is as if they were drawn tightly and slightly contracted. This figure is at the level of the fundus, and in front of the vessels. Only a few of the vessels can be traced past the edge of it, and these are all veins. As has been mentioned one artery (descending temporal) becomes fibrous and passes directly into one of the white figures down and in. The inner, i. e., central, edge of the ring is in most places free of pigment, except nasally, and the space enclosed by the ring is practically so. Especially out, up and out, and down and out, the outer two-thirds of the ring is densely pigmented. The pigment varies from slate to black, and lies on the white lace figure. The pigment is in general irregularly arranged, and obscures portions of the lace work and the few vascular trunks that can be traced into it. In the pigmented areas the white figures

are made to look whiter by contrast and lumpy and irregular by interruption of their visible portions. The characteristics of these white areas is more of an organized striated layer than the irregular masses of exudation seen in various forms of retinitis. In this respect the drawing is not exact. Nasally the pigment advances more to the disk edge of the ring, and here strongly suggests the bone corpuscle figures of retinitis pigmentosa, but are much less delicate. Except as suggested in the pigmented border of what appears to be the descending nasal artery, the relation of the pigment to the vessels walls so often seen in retinitis pigmentosa, cannot be made out. Beyond the limits of the ring, which are not sharply defined, the fundus shows in general a normal color, corresponding to that part around the disk. Numerous small, irregular scattered whitish areas irregularly pigmented can be seen over the whole visible parts of the eye ground. No retinal vessels are seen here but the choroidal vessels show as light bands with dark interspaces.

If we have for any reason an interference with the nutrition of the outer layers of the retina there is a tendency for the retina to atrophy and the retinal pigment to leave the pigment cells, and lie in the interspaces. The pigment may remain after complete destruction of the pigment cells, and Berlin showed as long ago as 1871 that these changes would follow section of the optic nerve and its artery.

This case is not retinitis circinata. The lesions of that disease are due to hyaline masses in the inner nuclear layer, derived from red blood corpuscles (Ammann, Arch. fur Ophth., 1897, quoted by Parsons). The lesions in this case were pigmented and more superficial.

In retinitis pigmentosa the nervous elements disappear, the retina undergoing fibrous degeneration. The pigment, released from the degenerated pigment cells, invades only the degenerated retina, where it is found between the cells and in the walls of the blood vessels.

*Retinitis proliferans interna*, or retinitis proliferans in the ordinary sense of the word, starts from retinal hemorrhages due to Bright's, injury or other causes, and is a connective tissue proliferation set up by the irritation from the hemorrhages. The close relation which this may bear to the connective tissue of the blood



vessel walls is shown in the case under consideration where the descending temporal artery anastomoses, so to speak, with the new formed fibrous bands.

In regard to the pathology of this case, the experimental evidence of Ward Holden (*Arch. Ophthal.* XXXIII, p. 125) is very illuminating. He subjected a series of dogs to the loss of blood, either a considerable quantity at once, or repeated smaller hemorrhage. "One or two days after a single profuse hemorrhage signs of edema of the nerve fibre and ganglion cell layers of the retina were present, and some of the ganglion cells showed evidences of beginning degeneration.

"The vision fails in the entire field. At first ophthalmoscopic changes are wanting, or if present consist in slight edema of the retina, with or without hemorrhages, and in narrowing of the retinal arteries and pallor of the disk."

Degeneration of ganglion cells is followed, as we know, by degeneration of the centripetal neuron, i. e., the retina and optic nerve.

In this case then we had a general hemorrhage or hemorrhages, followed by edema, and then hemorrhages, of the retina, not coming on for some weeks. As a result of this hemorrhage a degeneration of the retinal ganglion cells followed, that in time leading to atrophy of the retina and optic nerve. As features of the atrophy of the retina we note liberation of retinal pigment with massing of it in the intercellular spaces and vessel walls in the degenerated area. The irritation of the retinal hemorrhages produced a proliferation of the retinal connective tissue elements.

In the eye ground the pallor of the nerve and wasting of the vessels can be seen, while the accumulation of retinal pigment in a ring shape around the disk marks the extent to which the retinal degeneration had approached the nerve, near which nutrition was of course best preserved. Within the pigment ring the retinal epithelium is preserved. Outside of this ring the choroidal circulation is made visible by the removal of the pigment layer of the retina.

# INTRADURAL GLIOMA OF THE OPTIC NERVE, WITH MACROSCOPICAL AND MICRO- SCOPICAL FINDINGS.

By PROF. A. A. FOUCHER, M. D.,  
MONTREAL, CANADA.

Translated by Casey A. Wood.

Illustrated.

Tumors of the optic nerve, generally regarded as pathological curiosities, seem to be common enough, if one may judge from the number reported during recent years. According to the anatomical-pathological classification of Lagrange they are nearly all composite in character. The myxosarcomas head the list, followed by the pure myxomas and the sarcomas. Gliomata are relatively rare; Finlay records three such cases in a total of 117 neoplasms of the optic nerve. Byers, who has tabulated 102 histories of primary intradural tumors, has recorded six examples of glioma.

I have had an opportunity of treating and studying histologically one of these rare and interesting neoplasms; I have been able from time to time to observe the ravages of the growth upon the ocular structures.

The subject of these observations is a boy, aged 2 years and 3 months, referred to me by the family physician November 27, 1907.

When first seen the *right eyeball* had become quite prominent, the pupil was dilated and through the transparent media one could see the optic papilla presenting the appearance of an optic neuritis: swollen disk; tortuous, congested vessels on the background, disappearing in places to reappear a little farther on; hemorrhages scattered here and there about the arteries and veins. The intra-ocular tension of the globe, as immobile as if it were affected by a complete ophthalmoplegia externa, was very high. Although the child was too young to make the usual tests, vision appeared to be completely abolished: the sudden approach of an object to the right eye, while the left was covered, had no effect upon the child. As I was not given control of the case at the first visit I had the patient brought back several times until the parents offered no objection to surgical intervention. This decision on their part probably arose from the fact that the child soon commenced to suffer from violent pains in the eye.

Having made my diagnosis and obtained permission for an

operation I had a careful general examination made of the patient, but as no disease of the kidneys or nervous system was discovered I concluded that we had to deal exclusively with a tumor of the optic nerve proper.

A second examination, made two weeks after the first, showed a decided change in the intraocular picture: the papillitis now gave evidence of subsiding and atrophic signs appeared. The increased tension was still quite apparent, the disease being evidently that of a well marked glaucoma—with a steamy cornea, widely dilated pupil, pericorneal injection, enlarged scleral veins and a slight haze of the media.

The mother gave me the following history: The exophthalmus showed itself during the first days of last August, shortly followed by apparent discomfort about the eye, which deepened during the next few weeks into very severe pain.

With the exception of an instrumental delivery there was no history of traumatism and there had been no examples of tumor in the family for at least four generations when a paternal ancestor had had cancer.

On considering the possibilities of the case I concluded that while I might remove the growth without sacrificing the eyeball, either by the method of Lagrange or that of Krönlein, it would hardly be worth the while, in view of the defective vision, the mutilation necessary and the doubt about the exact character of the growth. Consequently, I did a simple enucleation, and completely removed the tumor from all its orbital attachments. The patient's recovery was perfect and six months after the operation the family physician writes me that there is no sign of recurrence of the tumor.

The eyeball and tumor were placed in a 4 per cent solution of formaline; a part of the specimen was retained for examination in Montreal and the remainder sent to the Eye and Ear Pathological Laboratory of Northwestern University Medical School in Chicago.

I wish to add here that to facilitate the complete enucleation of the globe and tumor from the orbit I found it necessary to transfix the cornea with needle and suture; probably the needle lacerated the lens and this will account for the alterations subsequently found in these structures.

No doubt the exophthalmus was not only due to the growth of the orbital tumor but also, in a large measure, to the congestion of the orbital circulation, as we know that even small extraocular growths may cause a decided protrusion of the globe, or a decided proptosis may follow simple enlargement of the intraorbital optic tissues. In this case the optic nerve may be so altered as to resemble a hunting horn.

The exophthalmus occurred straight forward and the globe was immovable, thus proving that the tumor more or less perfectly surrounded the eyeball, pushing it almost uniformly forward and preventing its excursions in any direction.



Fig. 1. Wound of Cornea. X 10. In this photomicrograph are to be noted—the unhealed corneal wound; the broken-down, pyramidal cataract, with degenerated lens fibers extruding through the wound; the peripheral anterior synechia, and the pigment on the anterior surface of the lens indicating previous posterior synechia.

The glaucomatous symptoms were in a sense accidental, but they have already been observed by Forster. Jocqs remarks the absence of pain in 6 per cent of these cases. In our patient pain set in suddenly and was attributed by me to the glaucoma that appeared as part of the evolution of the tumor.

In spite of the difficulty in determining the vision in one so young there can be no doubt, considering the involvement of the optic tissues, of its early and rapid decline.

The ophthalmoscopic changes, at first those of an optic neuritis with hemorrhages, followed, later, by atrophic alterations plainly showing at the papilla, were exactly those that have been mentioned by almost every author who has described a case like the one under observation.

Finally, I wish to acknowledge with many thanks the complete and interesting pathological report on the eyeball and tumor furnished by Dr. Edward P. Carlton, late Eye and Ear Pathologist, Northwestern University Medical School.

*Report on Eye No. 128 (Dr. Foucher), including a portion of*



Fig. 2. Intrabulbar Portion of Optic Nerve and Papilla. X 40.  
Showing papillitis, subretinal exudate (on left), forward-bowing of lamina cribrosa, and the distention of the intervaginal space by proliferation of the limiting endothelium.

an optic nerve showing a tumor-like enlargement which was divided longitudinally:

The eye, evidently the right, was fixed in 4 per cent formalin and hardened in successive grades of alcohol. After freezing the eye was divided horizontally through the nerve. The upper one-half was mounted in glycerin-jelly. The lower one-half was sectioned after imbedding it in celloidin.

Measurements of the eye taken before freezing were as follows:

Cornea—horizontal, 11 mm.; vertical, 9 mm. Globe—antero-posterior, 22 mm.; horizontal, 23 mm.; vertical, 23 mm.

The surface of the cornea was wrinkled vertically over the pupillary area on the temporal side. A grayish-white mottling could be seen when looking through the cornea on the nasal side of this wrinkle. Below the center an abrasion was noted with the long axis vertical.

An examination of the sections of the eye shows the following findings: The *cornea*, when viewed with a low-power lens, is seen not to be of uniform thickness. The vertical wrinkling seen with the naked eye appears in the sections as a groove which lies over the pupillary region about 4 mm. from the temporal margin. On the inner surface of the cornea only a slight flattening is noted, the indentation involving almost wholly the epithelium, Bowman's membrane and the outer lamellae of the substantia propria. Bowman's membrane can not be found in some of the sections of this groove. Internal to this indentation and below the center of the cornea near the pupillary margin there is noted an unhealed wound. The cornea is here nearly twice as thick as it is nearer the periphery. The wound (Fig. 1) is in the pupillary area near the lower margin and is nearly vertical, toward the nasal side. There has been no attempt at healing. The epithelium ends abruptly and the lamellae, though swollen, are not infiltrated. The wound gaps but is partly filled with broken-down lens substance and fibers. At the mouth of the wound lens fibers can be seen streaming out. This lens material can be easily traced back through the pupil to the degenerated lens. The wound covers more surface on the posterior surface of the cornea than it does on the anterior. Above and below the posterior lamellae, Descemet's membrane and the endothelium are lost through many sections where the anterior layers are intact. On the posterior surface of the cornea, on the nasal side, there is fibrinous exudate extending to the lip of the wound. The nuclei of the corneal corpuscles are very much elongated and flattened. The limbus cornea shows a flattening of the papillae on both the temporal and nasal sides.

*Anterior Chamber.* Except for the fibrinous exudate mentioned above and a thin layer of clear fibrinous exudate on the anterior surface of the iris on the temporal side, the anterior cham-



ber contains no deposits. The angle of configuration (the true iris angle) is obliterated on both sides. This is caused by a narrow peripheral anterior synechia. The canal of Schlemm is made out only with difficulty on both the temporal and nasal side.

The *Iris* is thinner than normal, but richly cellular. No chromatophores, however, are found in the stroma or on the anterior surface: a few are seen near the pigmented layer. Midway between the margo pupillaris and the root of the iris in some of the sections flat nodular thickenings involving the whole iris are found on both the nasal and temporal sides. The inner layer of the stratum pigmenti iridis is vacuolated in places. There is an ectropion of the stratum pigmenti iridis and the m. sphincter pupillae. This is more marked on the nasal side. Near the margo pupillaris on both the nasal and temporal sides the pigmented layer has been lost over a distance about equal to the extent of the m. sphincter pupillae. An examination of the stroma under the high power lens shows this to be closely packed with cells. No cell outlines can be made out. The nuclei would indicate the cells to be the fixed cells of the iris stroma with quite a large number of round cells. In the enlargements noted the cells apparently are almost all of the latter. No polymorphonuclear leucocytes are found. The larger vessels of the iris are empty except at the iris root. None of the vessels have thick walls.

The *ciliary body* appears flattened and atrophied. The pigmented stratum nearly everywhere rests directly on the muscular tissue. The ciliary processes show practically no change.

The *Chorioid*. In the chorioid there is everywhere noted an absence of pigmentation with the exception of the outermost layer, where a small amount of light brownish colored pigment is seen. The vessels in some places are filled with blood, in other places the vessels, though entirely empty, are not collapsed. At the papilla the chorioidal spur is well formed, but curved inward. The lamina basalis (membrane of Bruch) is plainly seen and can be traced nearly as far as the pigmented stratum of the retina.

The *Retina*. The retina presents a slight detachment in the posterior half which was not seen on dividing the eye. It first appeared during the imbedding process, but is not entirely artificial, as on both sides of the papilla there is a moderate amount of fibrinous exudate with quite a number of cells resembling lympho-

cytes. Where the exudate is the greatest in amount it is not wider in section than the thickness of the retina. In most places it forms a very thin layer when compared to the retina. The layers of the retina show the following: a. Pigmented layer. This layer can be traced almost from ora serrata to ora serrata, but cell outlines can not always be made out and the layer is represented in some places as a line of pigment granules. In a few places anterior to the equator the pigment is piled up in heaps. b. The

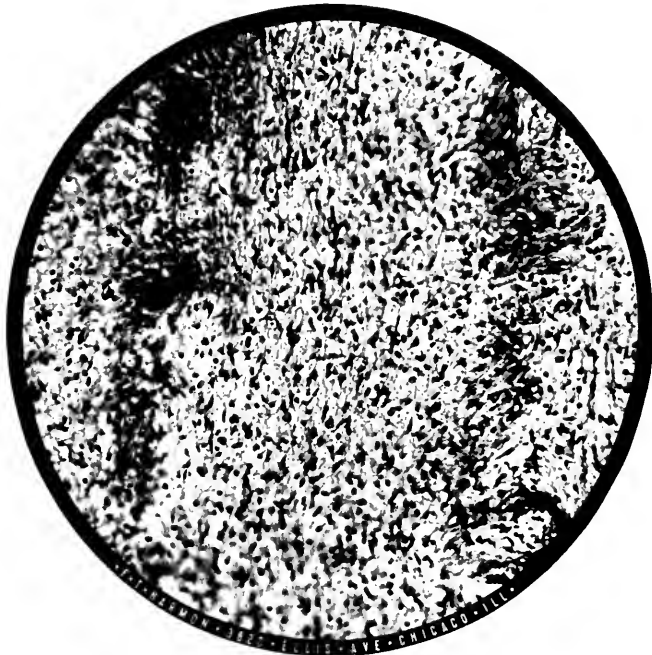


Fig. 3. The Intradural Tumor. X 150.  
Two septa are seen in longitudinal section. Haematoxylin and eosin.

rod and cone layer. On both the nasal and temporal sides this layer can be traced anteriorly to the points where the nuclear layers appear to fuse, when it is lost. The rods can nowhere be made out distinctly; they appear broken down, degenerated and matted together. The cones are plainly seen, but they are shriveled and distorted and in many places are separated from one another by cyst-like spaces. No cross-striated rod nuclei can be found. c. The outer nuclear layer. On the temporal side this layer can be traced

nearly to the equator, on the nasal side about two-thirds of the distance to the equator anteriorly from the papilla. The nuclei, while straining sharply, are matted together in large clusters, separated by cyst-like clear spaces. d. The outer molecular layer. This layer, though not sharply defined, can be seen on both sides from the papilla to the points where the nuclear layers fuse. Cystic spaces are fairly numerous. On the temporal side there is evidence of oedema. In this layer, especially where the retina is oedematous, a few large oval nuclei with their long axes vertical

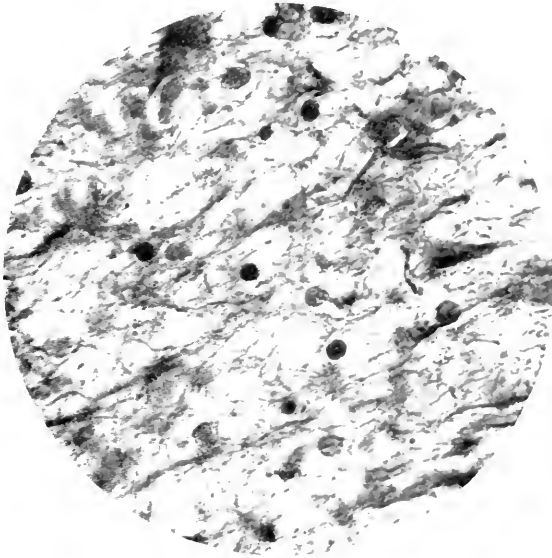


Fig. 4. The Intradural Tumor, X 600.

Stained by Mallory's phosphotungstic acid haematoxylin method to show reticulum of neuroglia fibers.

are seen. They are probably the nuclei of Müller's fibers. e. The inner nuclear layer. The nuclei stain on the temporal side almost as deeply and distinctly as do those of the outer nuclear layer. As in the outer nuclear layer the nuclei show a grouping between clear spaces in certain parts of the layer. Traced anteriorly this layer appears to fuse with the outer nuclear layer a short distance before reaching the equator. On the nasal side the layer is nowhere distinct, and the nuclei stain faintly. From the papilla it can be traced about two-thirds of the distance to the equator, where

it is lost entirely. f. The inner molecular layer. This layer is difficult to make out on both temporal and nasal sides, as cells of the inner nuclear layer and of the nerve cell layer have been crowded into it. g. The nerve-cell layer. This layer can nowhere be made out as a layer, though nerve cells can be recognized in places. h. The nerve-fiber layer. On the nasal side this layer consists of two layers of about equal thickness. An outer layer is apparently formed of elongated spindle cells with narrow rod-like nuclei. These may be degenerating nerve fibers, but they resemble more closely certain cells which are sometimes found in the vitreous body and are supposed to be of endothelial origin. This layer can be traced from the papilla to the point where the nuclear layers fuse. The inner layer is made up largely of supporting tissue of the retina with large vacuole-like spaces next to the outer layer. A few nuclei are noted in the inner portion of this inner layer. For a distance of 1 mm. from the papilla only the outer layer is seen. On the temporal side this outer layer, with elongated cells and many rod-like nuclei, is much thicker near the papilla than on the nasal side. The inner vacuolated layer appears 3 mm. from the papilla. The outer layer can only be traced about 2 mm. from the papilla, when it is lost as a distinct layer. Beyond this a few rod-like nuclei can be traced for 2 or 3 mm. The inner layer resembles that on the nasal side. i. The internal limiting membrane. This membrane is distinctly made out wherever it has not been distorted in cutting. The outer limiting membrane, however, is an irregular line interrupted at many points. The blood vessels of the retina are nowhere prominent and in many places are detected with difficulty. They are empty and the walls with few exceptions are not collapsed. No thickening of the vessel walls is noted, except in a few sections, where areas are found that may be interpreted as hyaline degenerations of large vessels. They are in the inner layers and cause a distinct bulging on the inner surface of the retina.

The *Sclera*. In the anterior part, extending from the limbus corneae to a point about opposite the middle of the orbiculus ciliaris, the vessels are surrounded by a small amount of round cells, making them prominent. The vessels themselves are mostly empty. The lamina fusca sclerae is distinctly seen. The lamina cribrosa sclerae is not well shown in any of the sections on ac-

count of the cell proliferation in the nerve and papilla. The scleral septa of the lamina cribrosa are not widely separated and there is a rather dense infiltration of cells which are probably neuroglia cells.

*The Lens.* The capsule is torn on the anterior and posterior surfaces in the pupillary area. There is also considerable loss of capsule, as the coiled portions would not be sufficient to cover the defect. On the anterior surface the area deprived of capsule can be traced one-fourth of the distance across the pupillary area, while in others it lies at about the same distance external or internal to the margo pupillaris of the iris. The area of loss, it is estimated, must approximate the pupillary area when the pupilla is dilated. On the surface of the capsule, on both the temporal and nasal sides, large and small patches of the stratum pigmenti iridis are to be seen in many of the sections. On the posterior surface the capsule loss and the area involved is about that of the anterior. The epithelium lentis is present wherever the capsule is not torn and is there normal. The lens substance shows interesting changes. The central portion of the lens corresponding to the capsule loss on the anterior and posterior surfaces is entirely gone. The lens fibers of the peripheral portion of the lens show degenerative changes. This is shown by round and oval areas of various size which are found in the cortical region near the anterior surface, extending in some sections one-half of the distance toward the equator. Also by similar areas containing deposits in the cortical portion extending from the jagged edge, along the line of loss, for some distance toward the equator. At the equator on both nasal and temporal sides there is an indication of a beginning degeneration in faintly outlined areas. The lens fibers near the posterior surface of the lens exhibit affinity for haematoxylin stain which may indicate beginning calcification. The fibrils of the zonula ciliaris are distinctly seen.

*Vitreous Body.* The only change is an increase of cells. Whether these are the cells normally found in the vitreous body is doubtful. Most of the cells have small round or oval deeply staining nuclei surrounded by a large amount of faintly granular or vacuolated protoplasm. A few cells with short processes were seen. The fact that in some sections areas were found with several groups of three and four cells leads one to conclude that

either these cells are from without the corpus vitreum or that the fixed cells have multiplied. The cells are in the center of the vitreous body far removed from the lens and the fossa hyaloidea is not disturbed.

II. *The Optic Nerve and Papilla.* The optic nerve was cut transversely about  $11\frac{1}{2}$  mm. from the globe. In addition there was received a portion of the optic nerve 11 mm. in length, which was



Fig. 5. The Sheaths of the Optic Nerve Tumor. X 45.

Above, the normal dura is represented by the dark band; below, a light area which is a portion of the intra-dural tumor. Between there are the pia and arachoid with the distended intervaginal space filled with proliferated endothelium—Van Gieson's picro-fuchsin.

cut longitudinally into approximately equal halves. Each portion is 11 mm. long and each is 9 mm. in width, measuring on the cut surface. This would give the nerve with its sheaths a diameter of 9 mm., as the two parts are symmetrical when united. No means could be found by which these two portions could be oriented with

respect to the globe. One of these was cut longitudinally, the other transversely after imbedding in celloidin. Sections were stained with haematoxylin and eosin, Van Gieson's picro-fuchsin, Mallory's aniline blue method, and Mallory's phospho-tungstic acid haematoxylin. Measurements of sections show that the optic nerve is



Fig. 6. The Same on the Opposite Side of the Same Section from which Figure Five is Taken. X 45.  
Above, the dura; below, and to the left, the pia. The intervaginal space is nearly twice as wide as on the opposite side.

from 5 to 6 mm. in diameter and that the sheaths have a combined thickness of 4 to 3 mm. The diameter of the optic nerve and sheaths  $11\frac{1}{2}$  mm. from the globe is scarcely 6 mm. From this it

is evident we are dealing with a tumor-like enlargement, which is seen to be wholly due to increase within the dura mater, an intradural tumor. The dura mater shows practically no change except that there is a thickening in some places and thinning in others. It is not very cellular, consisting almost entirely of fibrous tissue. The pia mater and arachnoid must be described as one layer. The pia is thickened but its outer border cannot be defined, as streaming out from it to the dura we find large numbers of connective tissue bands. The subdural and subarachnoid cavities are thus obliterated. The endothelium which normally lines these cavities and covers the cord-like projections is everywhere enormously proliferated. It is the cellular and fibrous increase in this intervaginal space which has so increased the thickness of the sheaths to the naked eye. The cells are arranged in masses in some places, like a carcinoma, in others in long cords between the strands of connective tissue. Many of the cells are scattered loosely. The nuclei of these cells stain rather faintly with the haematoxylin and show one or two granules or nucleoli; they are rather large and of an oval shape. Everywhere throughout this area there are numerous small, round, deeply-staining nuclei, surrounded by scarcely any protoplasm. In the connective tissue strands there are numerous long, sharply pointed nuclei. In some parts of the intervaginal space the connective-tissue formation predominates.

While the enlargement of the nerve and its sheaths appears symmetrical to the naked eye, sections show that the intervaginal space is about three times broader on one side than on the other, though no means of accurate orientation are at our command. Where the intervaginal space is the widest the connective tissue formation is greatest. In this thicker portion areas are seen which stain rather deeply with the haematoxylin and appear to be areas of myxomatous degeneration. Even in these thickened parts large numbers of endothelial cells with faintly staining nuclei are seen with the high power lens. Blood vessels are very prominent and in the areas where the endothelial cells show active proliferation and those areas where the connective tissue predominates even capillary vessels are made out with difficulty. Vessels are most plainly seen and seem to be most numerous where the sheaths are least affected.

The optic nerve is increased in diameter. Under a low power



lens in both transverse and longitudinal sections many of the septa are seen to have disappeared, and those that are present are greatly thickened.

A careful search through many sections stained by various methods fails to reveal any medullated nerves. The tissue everywhere stains deeply with haematoxylin and resists decolorization. Many areas resemble myxomatous degeneration. Between the septa, which are greatly thickened and infiltrated with cells having faintly stained by haematoxylin and eosin, Van Gieson's acid fuchsin and everywhere a delicate reticulum. This can be seen in sections stained by maeratoxylin and eosin, Van Gieson's acid fuchsin and Mallory's phosphotungstic acid haematoxylin method. With Mallory's aniline blue satin for connective tissue the reticulum is only faintly seen. Throughout this reticulum there are found numerous nuclei evenly scattered. The cell bodies can be made out in only a few places. A careful study of the nuclei shows that they may all be classified under three divisions: First, rather large, faintly staining nuclei having granules or nucleoli. These nuclei have an oval or, in some cells, nearly spherical shape. A few are pointed at one pole. A cell body with protoplasmic processes connecting with the reticulum can be made out surrounding some of the nuclei. These nuclei are regarded as belonging to the neuroglia. Second, rather large, deeply staining, elongated nuclei. Some of these nuclei are distinctly rod-shaped with rounded ends. The cell bodies where they can be traced have a delicate, long, spindle-shape, resembling involuntary muscle fibers. These cells are regarded as fibroblasts. Third, small, deeply staining, round nuclei with scarcely any protoplasm surrounding them. These cells are regarded either as lymphocytes or young fibroblasts derived from the tissue cells. These three types are about equally numerous and evenly distributed throughout the sections.

The central vessels are not distinguished in any of the sections, but rather large, tortuous vessels are seen in some of the fibrous septa. Throughout the nerve, especially in the neighborhood of the septa, clear, round or oval spaces of various size are noted. These are in "fatty" cells and are vacuole-like spaces due to the removal of fatty globules derived from degenerating nerve fibers.

The optic nerve was divided  $11\frac{1}{2}$  mm. from the globe. The

diameter of the nerve and sheaths is here scarcely 6 mm. The part of the nerve extending from the point of division to the globe, the intrabulbar part and the papilla present the following findings: The dura mater shows little change with the exception of a slight thickening and an increase of the tissue cells in some of the sections. The pia is better defined than in the portion of nerve previously examined. The intervaginal space with the arachnoid is greatly distended by large masses of cells formed by proliferation of the lining endothelium. Fewer round cells are here noted than in the part of nerve previously examined. The optic nerve is infiltrated with cells, but is not increased in diameter. The septa are not visible in longitudinal sections, but under a low magnification there is a faint indication of bundles due to the arrangement of the infiltrating cells. The cells noted in this portion of the nerve are the same as previously described in the severed portion with the exception that the small round cells are not numerous and many branched and oddly-shaped nuclei are present. No medullated nerve fibers can be found. In the intraorbital portion of the nerve the same cellular infiltration is found. The lamina cribrosae sclerae is obscured. As a whole it is bowed inwards. The papilla is swollen and infiltrated with cells which are mostly of the neuroglia and fibroblast type. There is complete obliteration of the papillary excavation. The central vessels exhibit slight thickening of the adventitia.

The extra-dural tissue shows slight infiltration with cells which are evenly distributed and appear to be derived from proliferation of the tissue cells. The posterior ciliary vessels and nerves show a proliferation of adventitial cells. Around some of the vessels there is a small amount of round cell infiltration.

From the above findings we may conclude as follows:

1. *The Nerve.* 1. That there has been parenchymatous degeneration of the nerve elements. 2. That no oedema is noted to explain the enlargement of the nerve, which is about twice the normal diameter. 3. That there has been an enormous proliferation of the interstitial tissues, affecting chiefly the neuroglia. To a much less degree, to thickening of septa. 4. That there is optic neuritis as shown by the large numbers of small round cells and fibroblasts. 5. That there is chronic perineuritis involving the pia and arachnoid as evidenced by an obliteration of the inter-

vaginal space through enormous proliferation of the endothelium and by infiltration with fibroblasts and round cells. 6. That there is a true papillitis due to proliferation and infiltration. 7. That we are dealing with an intradural tumor of the optic nerve and that it is a glioma.

II. *The Bulb.* 1. That the wound in the cornea occurred at the time of enucleation, or shortly before, as there is no evidence of inflammatory reaction or repair. 2. That there has been a pyramidal cataract with adhesions at the site of the corneal wound, followed later by loss of degenerated lens fibres through this wound. 3. That there has been an iritis with posterior synechia. 4. That there is evidence of glaucoma. 5. That the retina has been involved secondarily through the optic nerve. 6. That in neither optic nerve or tumor is there anywhere noted infiltration with polymorpho-nuclear-leucocytes nor is there any other sign of an infection. 7. That the changes in the posterior half of the bulb are secondary to trouble in the nerve, while the changes in the anterior half are secondary to the injury of the cornea and lens.

Diagnosis: Intradural glioma of the optic nerve.

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## OPHTHALMOPLEGIA TOTALIS (HYSTERICAL) CURED BY PSYCHOTHERAPY.

BY ARTHUR G. BENNETT, M. D.,

BUFFALO, N. Y.

In the early summer of 1909 the Department of Health of the City of Buffalo ordered all children to be vaccinated who had not been successfully vaccinated during the last five years. The duty of performing this beneficent operation fell upon the physicians connected with the city Department of Health. Among others to be vaccinated was Edward R., age 7, born in America of English parents, the father an epileptic of many years' standing, whose seizures are of the grand mal type, occurring generally at night, but also with less frequency in the daytime. He (the father) was an inmate of the Craig Colony at Sonyea for one year, but was not materially benefited. The mother is normal and healthy. There are several other children in the family, all more or less neurotic, but none up to the present time has developed epilepsy.

My patient, a well nourished boy of about the average size for his age, was vaccinated on May 27, 1909. He dreaded the ordeal, and because of his pleading and evident fear had been allowed to escape the previous years, but this year the health authorities would not permit of any more evasion. He took his medicine like a little man, though in mortal terror all the time. No bad effect was noted until June 5, when he complained of seeing double. The parents immediately jumped to the conclusion that he was poisoned by vaccine, and entered complaint at the health office. They were referred to the physician who performed the vaccination, who in turn advised them to consult an oculist. On June 10 I saw the boy for the first time. I found both pupils dilated *ad maximum*, and total paralysis of every muscle controlled by the third and sixth nerves of both eyes, with the exception of the movements of the upper lids, of which he had perfect control. There was total paralysis of accommodation and the eyes were as immobile as if they were set in plaster. Vision of each eye was 6/12. Each fundus was perfectly healthy. I made a superficial general examination to satisfy myself, and found the temperature 98.5 and heart sounds normal. I also examined the site of the vaccination, and to my surprise found that it had been absolutely unsuccessful and that the slight abrasion had healed completely. I felt convinced that I had to deal with a case of psychic paralysis, but that no stone should be left unturned I prescribed syr. hydriodic acid and tinc. nux vomica. This he continued to take for three weeks, increasing the dosage to tolerance, but without the slightest result. Feeling assured that I had a hysterical condition to deal with, mental therapy was instituted and all medication stopped. Bearing in mind the results obtained by my friend, Dr. Dewitt Sherman, in cases of bed-wetting in children, I determined to follow out the same plan. The mother was instructed that after the boy was in bed and fast asleep she was to talk to him, and assure him that his eyes would be better in the morning, to talk encouragingly to him during the day, and to continue in this way for five days, when she was to bring the boy again to me. This she did with the happiest results. The paralysis entirely disappeared, the pupils responded to light, the muscles recovered their full function, the accommodation became normal and the vision 6/6. The diminution in vision was due to a hyperopia of

+0.50. This child has remained perfectly well to date. The rarity of complete ophthalmoplegia makes this case worthy of record.

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## RUPTURE OF THE SCLEROTIC, WITH SUBCONJUNCTIVAL DISLOCATION OF THE CRYSTALLINE LENS.

BY GEORGE F. KEIPER, A. M., M. D.,

LAFAYETTE, IND.

Eye and Ear Surgeon to St. Elizabeth Hospital, St. Joseph Orphan Asylum, Children's Home, St. Anthony's Home for the Aged, Indiana State Soldiers' Home, etc., etc.

Direct rupture of the sclerotic coat of the eyeball is of very infrequent occurrence. Indirect rupture is very much more common. Up to 1889 Sachs collected 114 cases, which does not represent all the cases occurring, by any manner of means. The writer now calls to mind at least three such cases that have occurred in his experience. The case to be submitted is submitted as a case of direct rupture, taking the word of the patient for it. The report has been delayed purposely in order that the ultimate result may be predicted.

On November 8, 1905, came Edward M., age 39, to see me on the advice of his physician, Dr. W. S. Nesbitt, of Dayton, Ind. He presented the following history: The evening before, while husking corn in a stooping position, he was struck by a cornstalk from above, the injury involving the right eye. It immediately blinded him in that eye, and he went to see his doctor, who ordered hot applications to be made to the eye, the hour being now after dark. In the morning he again saw his doctor, who, recognizing the gravity of the injury, courteously referred him to the writer. The following condition was present: The eyeball was very soft, the tension being —3. Considerable chemosis was present and the anterior chamber was filled with blood, at least. Under the conjunctiva above could be seen the crystalline lens apparently in its capsule. The conjunctiva was unruptured. Just back of the ciliary region was an irregular tear in the sclerotic, about a centimeter long, parallel with the margin of the cornea. His vision was nil. Prognosis was given as bad.

No attempt was made to remove the lens, as such an attempt

would result in further loss of vitreous. So the hot applications ordered by Dr. Nesbitt were continued. In addition to this he was directed to drop into the eye a 1 per cent solution of atropia sulphate every three hours. He was seen frequently after this until the following February 17th, when by that time the lens had been gradually absorbed, the inflammation following the injury having ceased some time before. The wound in the sclerotic had healed over, and the blood in the eyeball had absorbed to a considerable degree. Some became organized and can be seen as black bands in the vitreous humor, when illuminated by the ophthalmoscope. His ultimate vision with a +10.00 D. lens is 20/CC, and the last examination, made a few months ago, shows no diminution. The iris is folded back above, giving the appearance of irido-dialysis. To this date the eye has given him no trouble.

While Schirmer has reported twenty-seven cases of sympathetic ophthalmia following subconjunctival ruptures of the sclerotic and choroid, out of the comparatively large number of such ruptures, the prognosis in our case seems to be good for the retention of the eyeball with its resultant vision, though he has been warned to heed any inflammation of that eye, no matter how slight it may be. The fact that our patient has a full eyeball is a source of great hope for the future as to the injured eye.

According to Parsons, in his "Pathology of the Eye," the "lens fibres are rapidly absorbed, but they may long remain almost unaltered, *e. g.*, 15 years (Vieusse), 18 years (Treacher Collins), probably owing to an intact capsule. Calcareous deposits may mark its site (v. Arlt), or a cyst, which may discharge periodically (Ansiaux)."

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## MELANOTIC SARCOMA OF ORBIT.

By JOHN B. HADEN, M. D.

GALVESTON, TEXAS.

(Illustrated.)

P. D., age 5 years, Beaumont, Texas. Mother brought child to my office in Galveston for examination, giving the following history. Two weeks before noticed left eye slightly lower than right. Child always healthy, family history negative.

Vision 6/6 in each eye. Fundus normal in each. Left eye on plane 15 mm. below right eye.

Diagnosis: Tumor of orbit, operation advised.

Three days after first visit, operation done, incision made lower border supra-orbital margin and tumor mass removed. Parents would not consent to removal of eye. Wound healed promptly, ten days after operation child returned home.

Three weeks after operation child was brought back, distinct tumor felt and seen between supra-orbital margin and eye ball. Operation advised and consent to remove contents of orbit se-



cured. Complete exenteration following day. Orbital area exposed daily to X-ray for eight days, granulations formed promptly and tumor rapidly returned. Mass removed with ecraseur and curette three times within eight weeks after second operation. Child sent home to die. Death occurred about fourteen weeks after first operation. Photograph taken immediately following death, secured through the thoughtfulness of Dr. Barr, of Beaumont, to whom I am indebted for it.

## VARIX OR AN ANGIOMA VENOSUM OF THE ORBIT CURED BY ALCOHOL INJECTIONS.

BY J. FERDINAND KLINEDINST, M. D.,  
YORK, PA.

In May, 1909, Mason R., aged 31, who is employed in a wall paper factory, consulted me on account of a swelling of his right lower eye lid whenever he stooped forward to tie his shoe laces, or for any other purpose. The swelling would also occur when he would lie down upon his right side, or upon carrying a heavy weight upon his left shoulder and bending the neck to the right, thus compressing the right jugular vein.

History: The patient's family history is good, there being no record of any similar ocular affection in any of his ancestors or relatives. He has never been sick or had any disease, save measles in childhood, and at present is a healthy man. He worked on a farm until he was 21 years of age, since which time he has been employed in a wall paper factory. He has done some heavy work during his life. His appearance shows a healthy young man with no apparent ocular trouble. Sitting quietly in a chair both eyes presented a normal appearance. The moment he stoops forward, or inclines head downwards, the outer half of the lower right eye lid bulges and protrudes forward, appearing of a blue color. The external half of the tarso-orbital sulcus is obliterated by a bluish swelling. If this condition continues long, from any work that requires stooping, he experiences a sense of fullness with a dull pain in eye. There had been no exophthalmus or impairment of vision at any time.

The patient has noticed the trouble for five years and says "it has been growing worse," and knows of no cause or injury to account for it. The moment his head assumes an erect position, within a few seconds, the swelling rapidly disappears.

Examination: Palpation shows a soft compressible tumor of the external half of the lower right eye lid, including the external canthus, with obliteration of the conjunctival sac due to a bluish swelling like an enlarged vein, about one-fourth of an inch in diameter. There is no bruit or pulsation perceptible. The vision of both eyes is 15/20, there being a low grade of hypermetropia. An ophthalmoscopic examination reveals nothing abnormal, neither



is there any heterophoria. The patient has had no constitutional disease and enjoys good health. The nose, throat and rhinopharynx are normal.

Treatment: The writer first suggested to the patient an operation for excision of the veins, which he positively declined. Electrolysis was then tried, five treatments being given: the needle was plunged about one-half inch into and along the floor of the orbit toward the outer canthus. The negative current being used during the first three treatments without any effect upon the tumor, the positive current was then tried during the last two treatments, also without any effect. These treatments were followed by some soreness of orbit, which lasted several days. I then conceived the idea that if an inflammation could be produced in the vessel walls the vascular tumor would disappear. Therefore alcohol was selected as the remedy that probably would produce a peripblebitis, and as also being antiseptic and non-toxic in small doses. After anaesthetizing the conjunctiva with cocaine solution, three drops of alcohol were injected into the orbit by means of a hypodermic syringe. The needle was plunged through the conjunctiva close to the floor of the orbit under the vascular tumor, so as to avoid puncturing the veins, toward the external canthus to the depth of about half an inch, and the contents injected. There was sharp pain felt in orbit for a few seconds, which soon subsided without any reaction, followed by a feeling of soreness in orbit for a few days. One week later the swelling was not so great when the patient stooped forward. A second injection of five drops was given at this time in the same manner as the previous one. This injection was followed by sharp pain, with some slight swelling of the tumor; this subsided in a day, followed again by soreness within the orbit for several days. One week later the tumor did not seem to bulge as much as formerly. A third injection of six drops was given. This was followed by great pain for a few seconds, which lessened before the patient left my office. He returned in about three hours, complaining of some soreness in orbit and intermittent sharp pain. There was great swelling and bulging of the whole lower right eye lid from outer to inner canthus, with obliteration of the tarso-orbital sulcus; the conjunctiva and skin of lid were of a bluish color, but there was no exophthalmus or impairment of vision. Under ice applications the following day the swell-

ing had subsided, but there was a continued soreness within the orbit for several days. One week later there were no signs of any further trouble, the venous tumor having disappeared; the patient could now bend forward or stoop and not cause any swelling or bulging of eye lid. To make a thorough cure I gave another injection of five drops of alcohol into the same region of the orbit. This was followed by the usual pain and soreness. It is now nearly four months since the last injection and I feel reasonably sure that a cure has been effected, without any impairment of the functions of the eye.

So far as I am able to learn from literature that has been consulted, this is the first cure on record of a vascular tumor of the orbit by injection into the orbit of alcohol.

The question might be asked what pathological changes occurred within the orbit that caused the varix to disappear? I believe that either a mild cellulitis developed, or a peripblebitis followed by a thrombo-phlebitis and organization of the clot, with obliteration of the veins. I base this supposition upon the fact that at neither treatment did I puncture a vein, for there was no extravasation of blood within the conjunctiva, or orbit.

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## A CASE OF MONOCULAR HEMIANOPSIA DUE TO ETHMOSPHENOIDAL DISEASE.\*

BY FREDERICK KRAUSS, M. D.,

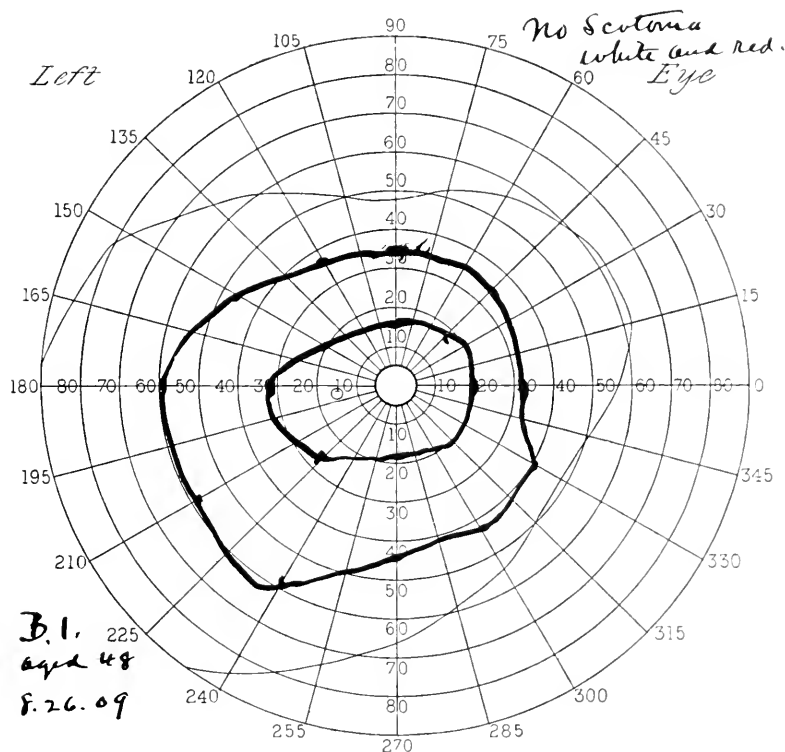
PHILADELPHIA, PA.

The ocular symptoms caused by sphenoethmoidal disease are so varied that the report of the rarer manifestations are of great interest and value. In the chronic forms of sinusitis, central scotoma is the most common symptom of transferred inflammation, probably due to a retrobulbar neuritis. If carefully examined we would probably find it in most cases in which visual disturbances are noticed by the patient. An extension of the inflammation to contiguous nerve fibers will affect other parts of the field, leading to partial and later to absolute scotomata, not only for colors but also for white. The nature of this inflammation is known, but it has always appeared to be of a low grade and due to the absorption of toxins from the neighboring focus of inflammation, prob-

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\*Read before the Section on Ophthalmology, College of Physicians, Philadelphia, November 18, 1909.

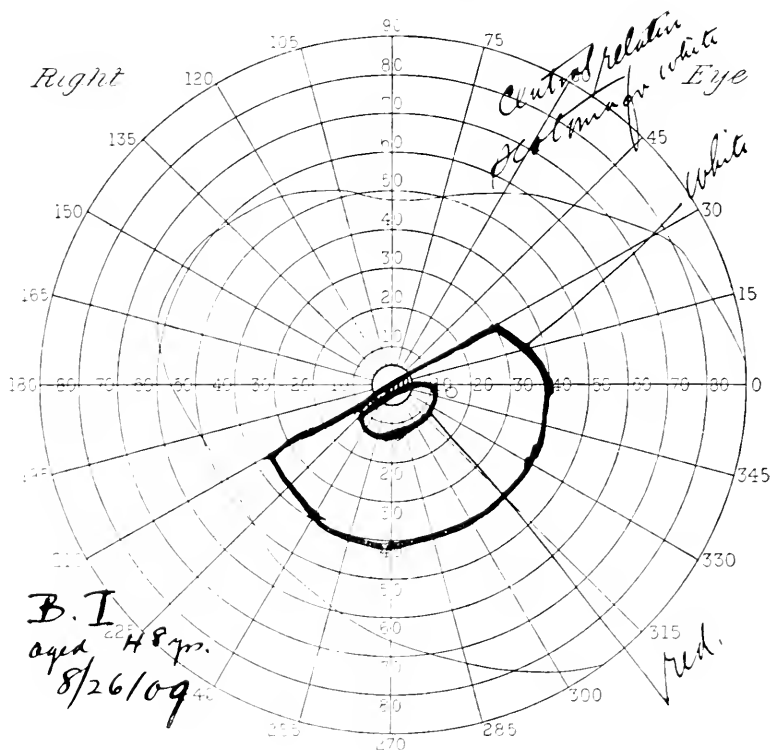
ably through the lymph and venous channels. That a local toxæmia is present rather than an inflammation in the ordinary sense seems to be proved by: 1st. The comparatively slight changes in the optic disc and fundus as seen with the ophthalmoscope. 2d. The great rapidity with which the nerve recovers its functions after the toxins are directed away from the nerve by opening the offending sinuses. 3d. Relapses occur as soon



as there is a blocking of the toxins or poisons. 4th. Optic atrophy will result when the toxæmia has action for a prolonged time.

In the case reported below, the salient features are that there was a chronic sinusitis for many years, which had lately caused depression of spirits and intense headache. Removal of the turbinate body of the ethmoid bone, and the opening of most of the ethmoidal cells gave great relief and improvement. Purulent discharge continued freely from the frontal and ethmoidal cells of

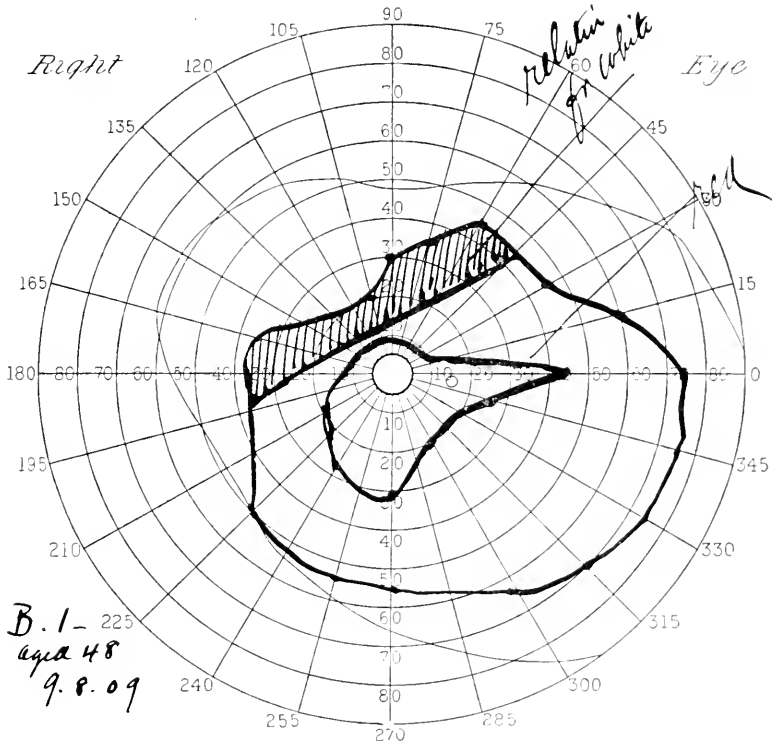
the left side, while those of the right side secreted to a lesser degree. Four months later the patient became conscious of a relative central scotoma in the right eye and on the apparently least affected side. This was transient. It recurred with greater intensity six weeks later and rapidly extended until the upper half of the field of the right eye was affected. The scotoma was absolute for red and white. The fact that the upper half of the field should



be affected, and that at a slight angle, conforms exactly with that portion of the optic nerve nearest to the sphenothmoidal region.

I say sphenothmoidal, since we know from many observations that the posterior ethmoidal cells frequently encroach upon the sphenoid, bringing them into close association, so that in the living it is difficult to differentiate between diseases caused by the posterior ethmoid and the sphenoidal cells. I believe that the posterior ethmoidal cells are the most frequent offenders.

In this case operation showed a large posterior ethmoid cell encroaching upon the sphenoidal bone up and out. The entrance to the sphenoid was displaced to very near the center of the pharynx, therefore near the sphenoidal septum. The posterior ethmoidal cells extended 1 cm. into the sphenoid, whereas the sphenoidal cavity extended at least 2 cm. further, the sphenoid measuring 9 cm. from the anterior nasal spine of the maxillary



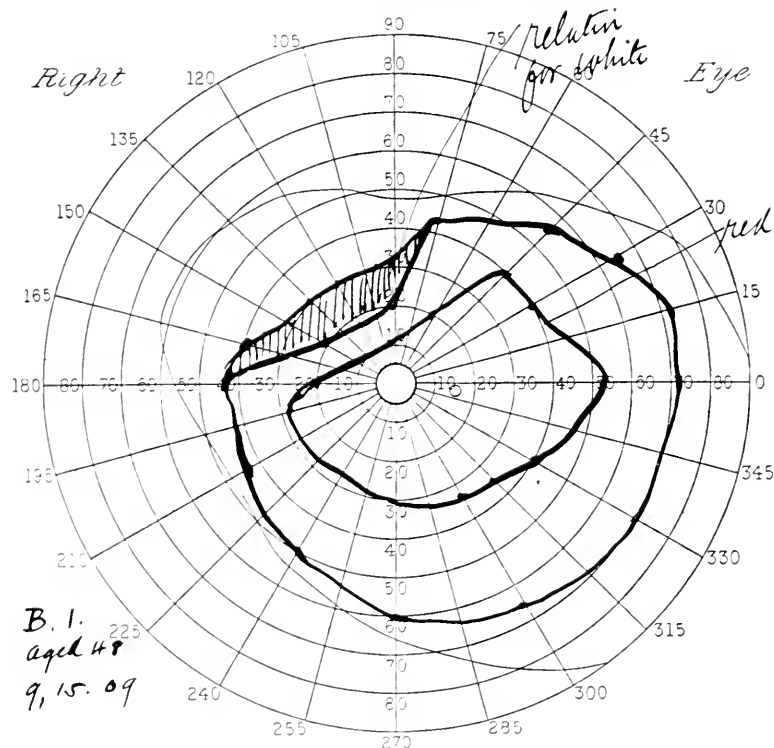
bone. The recurrence of some of the ocular and nasal symptoms was probably caused by reinfection and occlusion of some of the partially healed sinns cells.

The case history is as follows:

The patient, B. L., age 48, Italian, married, was referred to me on March 9, 1909, by Dr. Melocchi, on account of polyps in the nose. The patient stated that her nose had been blocked almost continuously for a number of years, especially so on the left side.

There was free discharge into the throat at night, disturbing her sleep. Supraorbital headache, with exacerbations off and on, had been present for years, frequently very intense. Her general health was poor, the patient feeling unable to do any work.

Examination disclosed tenderness over the frontal and ethmoidal sinuses on both sides, worse on the left side. Both middle turbinates were very large and boggy, apparently undergoing mucoid change, and completely blocking the nares.



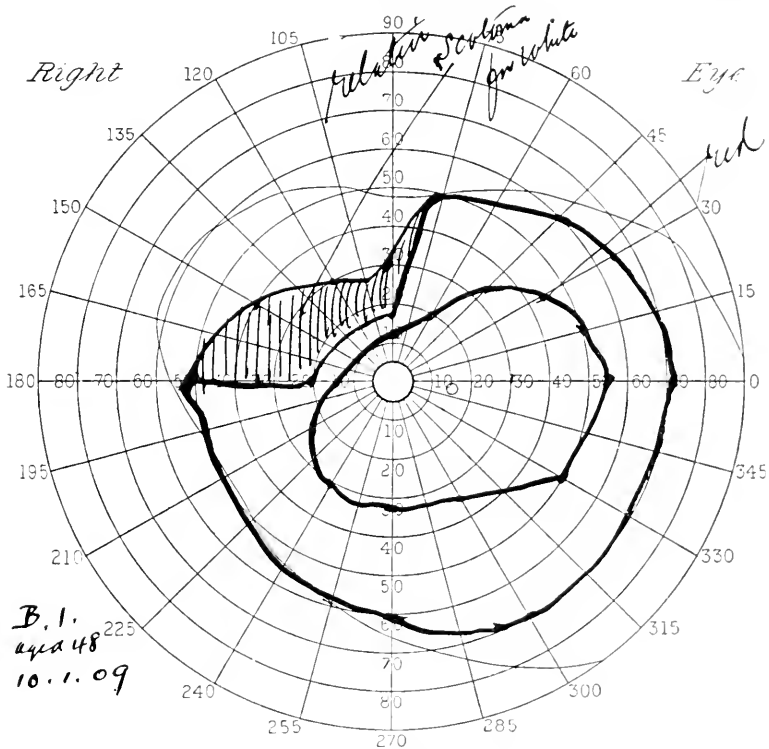
There was some pus above and below the middle turbinate.

The patient insisted upon ether narcosis for operation, which was done with unusual and excessive bleeding, requiring packing after the first incision. The previous use of cocaine and adrenalin, usually so effective, seemed to be without any effect.

The operation was completed, however, and consisted of complete ablation of the middle turbinate of both sides of the nose, and opening of the ethmoidal cells. Packing was employed.

The patient made an uneventful recovery. The free discharge of pus continued, especially from the left side, and under cocaine the rest of the ethmoidal cells, from which pus issued, were opened, secundum artem. The right side discharged comparatively little. Both frontal sinuses were washed out, especially the left, which showed considerable pus.

The patient, except for the secretion of pus, was comfortable



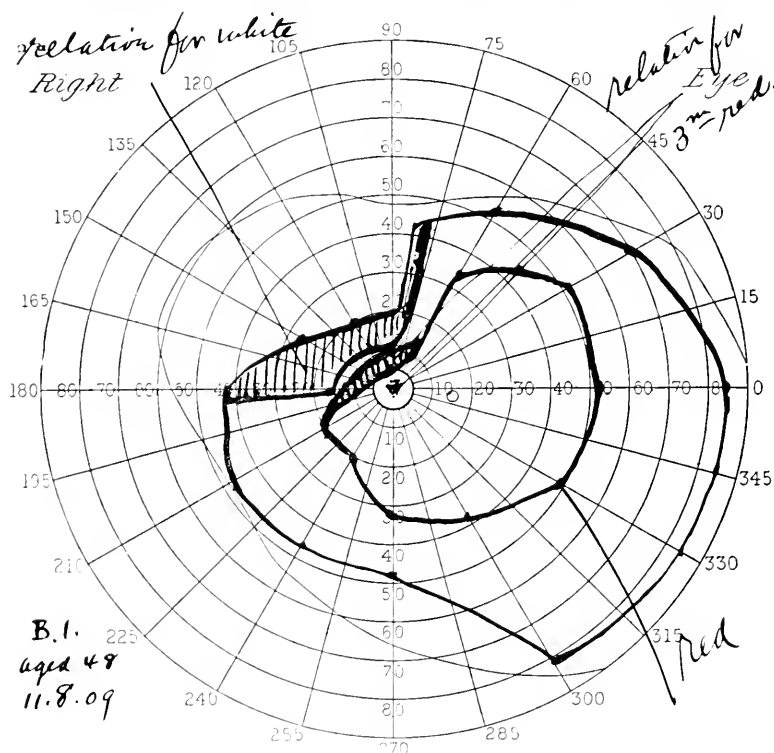
until July 7, 1909, when she complained of poor vision in the right eye.

The eye ground examination showed the optic nerve to be quite grey in tint, but the vessels, retina, chorioid, etc., were normal. Refraction under hyoscine showed a myopia of 4 D., combined with astigmatism of 1 D., the vision being 5/7 in each eye. The field of vision disclosed no scotomata.

July 20, 1909, the patient stated that it appeared to her that

everybody that she met had a "dirty face," suggesting a relative scotoma for red. Upon taking the field a faint relative central scotoma for red could be elicited. This condition diminished gradually until August 26, 1909, when the whole upper part of the patient's field of vision suddenly disappeared. The patient had been on a vacation and returned much alarmed.

The field of vision at this time showed a superior hemianopsia.



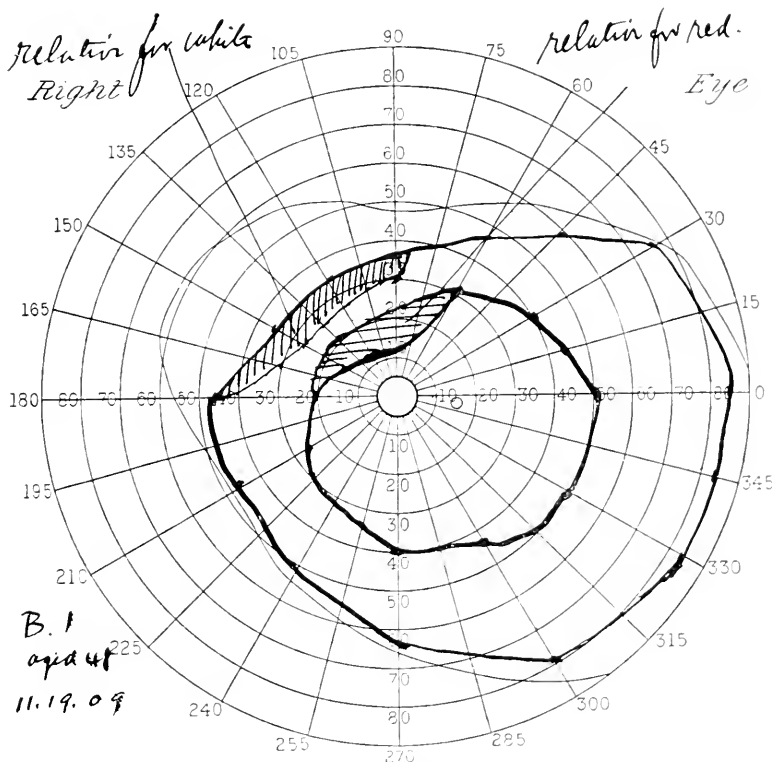
the scotoma being slightly tilted to the temporal side. The nose examination disclosed muco pus exuding from the left ethmoidal and frontal cells, but the right side of the nose was free from pus.

There was a marked prominence in the region of the sphenoidal bone on the right side. The X-ray showed a shadow in this place, just anterior to the sphenoidal sinus, which latter was apparently clear. An operation under cocaine was done on the right side. The prominence proved to be a very large posterior or ethi-



moidal cell encroaching on the sphenoid above. It was lined with a very pale or blanched mucus membrane. No great amount of pus was discovered at the time of the operation. The anterior wall of the sphenoid was largely removed, evacuating a small amount of mucus pus.

Upon removing the packing within twenty-four hours a very offensive odor was noticed and pus poured from the sphenoth-



moidal region. The pus continued to flow freely for about ten days, when it quickly diminished and is now very slight from either side of the nose.

The operation took place on September 1, 1909. After one week the field had increased considerably, as shown in the diagram, and on September 15, 1909, had regained all but a part of the upper nasal quadrant.

The condition gradually improved until October 17, 1909.

when, after the use of massolin (lactic acid culture) there was an immediate return of a free mucoid discharge and pain in the left eye. A fresh infection had apparently occurred. After two weeks of treatment by mild cleansing, etc., a few small polypi appeared on the roof of the nose (cribriform plate) near the orbital wall and the swelling of the mucus membrane produced a contraction of the opening in the sphenoid. There was an extension of the area of blindness and relative scotoma in the field of the right eye with a faint central relative scotoma for small 2 mm. red objects. After reopening the sphenoid, extending the opening as low down as possible, and removing all granulation tissue in the ethmoidal region, the field of vision again cleared, with great diminution of the amount of pus. Massolin was again used, but without further deleterious effect.

The patient has been free of headaches and her general health is greatly improved. The field of vision is nearly normal, and the nasal discharge very slight.

1701 CHESTNUT STREET.

## Reports of Societies

### COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting of Oct. 16, 1909, in Denver.

DR. CHARLES E. WALKER, Presiding.

#### Penetrating Ciliary Wound.

Dr. E. H. Boyd presented a man with detached ciliary processes and extensive degenerative changes, resulting from a penetrating wound on the nasal side of the cornea in the ciliary region of the left eye, caused on August 3 by a piece of glass. The lens was not injured. At no time had it been possible to obtain more than a faint outline of the fundus. After the hemorrhage cleared the patient was able to see large objects and could still do so dimly. From the time the wound was sutured the patient had no pain. The wound healed kindly and the tension remained normal until October 11, when it was found to be minus 1. A dense whitish membrane to the nasal side, just internal to the site of the wound, was probably exudate. The vision of the right or uninjured eye was 20/20, the accommodation was unimpaired, and there was no photophobia. The extensive involvement of the ciliary body and some manifest shrinkage of the globe, caused Dr. Boyd to desire the opinion of the society with regards to the proper procedure in this case.

#### DISCUSSION.

Dr. Magruder had recently seen a penetrating wound of the sclera, iris and lens from the explosion of a water gauge, with probability of glass within the eyeball. There had been iritis at first, but the eye was not quiet, the tension normal, and V=20/70 with correction.

Dr. Black had observed that most eyes cut with glass did well. He thought Dr. Boyd's case showed evidence of severe traumatism, with probable large intraocular hemorrhage, but no sign of glass in the eye. He expressed a favorable prognosis as to retaining the globe, but a poor one as to sight.

Dr. Bane thought the safest plan was to remove a congested blind eye, showing inflammatory changes. Dr. Hilliard and Strickler concurred in this opinion. Dr. Patterson suggested that transillumination might show the nature of the exudate.

Dr. Stevens considered the eye a very dangerous one, under-

going degeneration and softening, and therefore presenting a bad outlook. He would remove the eye. Dr. Walker agreed with this opinion.

Dr. Neepor would remove the eye at once unless he could keep it under close observation.

Dr. Jackson regarded the condition as a slow cyclitis, with ciliary exudate. X-rays would be most likely to reveal glass if present. He would remove the eye soon.

Dr. Libby considered that the eye must be removed sooner or later, and so would remove it now, thus evading responsibility for possible sympathetic ophthalmitis later.

Dr. Ringle was reminded of a similar case from exploding shell. Cyclitis developed. A foreign body was found in the globe, on enucleation.

### **Exudative Choroiditis.**

Dr. E. O. Sisson showed a tubercular male patient, aged 54, who had entered a sanatorium in the East, June 14, 1908, with moderately advanced pulmonary tuberculosis. After six weeks in bed the symptoms abated and the patient improved rapidly. While apparently doing well he complained of failing vision, which grew rapidly worse. R. V.=20/100, L. V.=20/40. Examination showed exudative choroiditis in the right eye: one or two white patches near the optic nerve projecting in the vitreous. He was given tuberculin ("B. E.") in doses of 1/1000 to 1/5000 mg.: at the end of six weeks vision was improved. On July 27, 1909, Dr. Sisson examined him at a sanatorium in Denver, and found the general condition good, but vision worse. R. V.=8/100, L. V.=15/30. Examination of the right eye showed a slightly bluish tinge to the sclera. Details of the fundus could not then be seen because of very hazy vitreous and floating opacities, but just below the junction of the inner and lower quadrant of the disc a large whitish patch was visible. The patient had ceased taking tuberculin. Although Dr. Sisson could get no definite history of syphilis, he suspected a mixed infection and put the patient on mercurial inunctions. The condition failed to improve, and as the resistance was excellent and no active changes were taking place in the lung lesions, the use of K. I. was begun. At the end of three weeks vision had improved, the vitreous was much less hazy, and details of the fundus were clearer and the general condition good.

**Traumatic Cataract.**

Dr. W. A. Sedwick presented a youth who had been injured three months before by a blow from a stick, which penetrated the cornea and lens capsule. In the first three weeks following the accident there was considerable swelling of the lens, but increase of tension was combatted by spontaneous opening of the corneal wound from time to time during this period. Then the anterior chamber closed, the eye got quiet, and absorption of the cortex proceeded satisfactorily. Anterior synechia developed at the site of the corneal wound, making the pupil somewhat irregular. When shown to the society considerable opaque anterior capsule and a moderate amount of unabsorbed cortex were visible. Dionin powder was being dusted into the eye daily.

**DISCUSSION.**

Dr. Libby suggested the use of dionin every second or third day, rather than daily. If absorption of the cortex was not complete in a few more months he would do a broad dissection of the anterior capsule, stirring up the cortex, and at the same time try to divide the adhesion between the iris and cornea.

Dr. Neepor had observed, in several cases a penetration of the lens by a foreign body, two in which only a slight lineal scar remained.

Dr. Stevens spoke of a similar case with no lens opacity at the end of five years.

Dr. Black said that while he had noted no opacity at first in some cases of foreign body in the lens, he had seen clouding later and eventually complete cataract.

**Anilin Staining.**

Dr. G. F. Libby showed a woman whose eye was stained a deep blue from the point of a "Mephisto" pencil, which flew into the eye while sharpening the "indelible pencil" three and one-half hours before. The particle had lodged between the lids and eye ball at the external canthos and remained there one-half hour, when the patient washed it out because told that the eye was stained blue. Two hours later, when she presented herself for examination, the outer two-thirds of the ocular conjunctive was stained a dark blue, the largest veins being blue black, and the inner third was a paler blue. There was anilin-stained mucus at the seat of lodge-

ment, but no piece of the point of the pencil. The cornea was not affected. Three irrigations of the eye with 3 per cent hydrogen peroxide that evening, and two the next morning were followed by complete restoration of the natural color. One per cent holocain combined with 2 per cent boric acid solution was dropped into the eye before irrigating with  $H_2O_2$ . Rather a severe conjunctivitis developed on the second day but gradually disappeared in the following four days; although the hydrogen peroxide in 1 per cent solution was continued for two or three days on the patient's initiative.

### **Kerato-Iritis.**

Dr. Melville Black presented a man 30 years of age who, ten years before, had been under the care of Dr. L. Webster Fox for a kerato-iritis which lasted several months. He had had no trouble since until recently. Dr. Black saw him first on September 20th. He then complained that for ten days the left eye had been inflamed and photophobic, but not painful. A well developed serious iritis with decemetitis was found. A questionable history of syphilis was obtained, so mercurial inunctions were ordered. About a week afterwards interstitial corneal deposits developed, gradually increasing until very numerous. They varied in their arrangement and number. At times they were like streaks of clouds, and again they were irregular small splotches or spots, and again they were irregular large dots. He had no pain except when the tension was high, and he seemed to be healthy. His treatment consisted of atropin, dionin, and the intermittent X-ray every other day. The patient said that the X-ray "made the eye feel good."

### **DISCUSSION.**

Dr. Neepor expressed a preference for mercury by injection rather than per oram or by inunction, in inflammations of the sclera, cornea and iris. He had used the mixed treatment in kerato-iritis with spots in the substance of the cornea.

Dr. Marbourg said that small pox had seemed to check sympathetic ophthalmitis which arose from the stump of a fellow eye which had been previously injured.

### **Ectopia Lentis.**

A case of bilateral dislocation of the lens was shown by Dr. Black. One eye had been unsuccessfully operated on ten years

before. In the other the pupil was displaced almost to the margin of the cornea, the iris was tremulous and the vision much lessened.

### **Destructive Penetrating Wound of Eye.**

Dr. Black presented a man, aged 40, who was brought to him, May 6, 1909, by Dr. C. A. Ringle. Seven days before, while pounding a "hardy" on an anvil, something flew and struck him on the left upper eye lid, which bled somewhat. The next morning he found his vision blurred. The eye was not then painful, but gradually became so. When Dr. Black first saw the patient he was in constant pain. Examination showed a scar in the inner third of the left upper lid, with a corresponding scleral scar in the superior nasal quadrant of the globe, 6 mm. from the cornea. With the ophthalmoscope the foreign body could be seen in the clouded ocular media just back of the lens, corresponding to the scleral scar. A radiograph taken by Dr. G. H. Stover showed the presence of the foreign body in this situation. The eye was much inflamed and the iris somewhat discolored. The scleral wound was enlarged and the tip of the Hardy magnet brought to the wound, but without response. An extension tip was then introduced through the wound into the eye with negative results. After working in this way for some time without results, it was concluded that the metal was of low magnetic value. So the instruments from which the metal came were sent for and tested and were found to be about one-third magnetic value as compared with common steel or iron. The patient was then taken to Dr. C. E. Walker's office and his Meyrowitz-Haab magnet used. After working for over half an hour with that instrument the metal was extracted. It was a chip about 3 mm. long and 1 mm. thick. Ice applications were used for several days almost continuously. The eye quieted down rapidly, but a low grade of uveitis developed. Heroic doses of sodium salicylat were given and atropin and dionin used locally. The eye finally became quiet but vision was almost nil and no view of the fundus was obtainable. On September 9th the eye was again inflamed and painful. The use of atropin showed extensive posterior synechiae which could not be broken away. The iris was discolored and the tension of the globe -2. He was again given heroic doses of sodium salicylat, with atropin and dionin locally. When shown before the society the eye was quiet, but the iris was extensively attached to the lens capsule, the lens was somewhat

opaque and the tension minus. Dr. Black raised the question of immediate enucleation as against awaiting symptoms of sympathetic irritation, and asked the length of time that sympathetic irritation had been known to continue before sympathetic inflammation appeared.

#### DISCUSSION.

Dr. Jackson thought sympathetic irritation and sympathetic inflammation were distinct diseases. He had seen sympathetic irritation causing practical blindness for several weeks, developed twelve years after ocular injury. The longest time after injury of beginning sympathetic inflammation, in his experience, had been six years. The removal of the exciting eye was immediately followed by recovery of the eye suffering from sympathetic irritation. But from sympathetic inflammation recovery after enucleation might be incomplete or not occur at all.

Dr. Marbourg spoke of the irritation of the eye by oxidation of a retained iron foreign body, and said that such eyes were usually removed later on.

Dr. Boyd would remove the eye in question at this time as it would have to come out later.

Dr. Walker thought there was no connection between sympathetic irritation, which might be very protracted, and sympathetic inflammation. In the latter condition he favored immediate removal of the exciting eye. He also spoke of the presence in the lens, of three small pieces of dynamite cap, the result of a recent injury. No harm had yet been done. He raised the question of how small a foreign body could cause sympathetic ophthalmitis.

Dr. Stevens said that any foreign body shown by the X-ray will cause trouble.

Dr. Jackson stated that no piece was small enough not to be of some danger; although the larger ones were more dangerous. Copper particles were not likely to do much harm, but minute particles of iron might cause siderosis.

#### **Gunshot Wound of Eye.**

Dr. E. B. Neeper reported the case of a healthy girl of 17, who was first seen by him September 20, 1909, after having received a gunshot wound of the left eye during the previous evening. The foreign body, supposed to have been fine birdshot, passed through



the lower lid and entered the conjunctiva about 5 mm. below the lower fornix and about  $1\frac{1}{2}$  mm. to the left of the median line. The lid wound was probed and seemed to be about  $2\frac{1}{2}$  mm. in diameter. The pupil was dilated in an oval form, the long axis lying in the horizontal meridian. The interior of the eye appeared normal except the vitreous, which was slightly turbulent and there seemed an unusual whitish spot at the macula. The lids were greatly swollen and there was much conjunctival ecchymosis. L. V.=20/80 and had remained practically unchanged. X-ray front view showed the foreign body to be 4 mm.x6 mm., side view, 4 mm.x1 mm., and showed the center of such body to be 13 mm. back of the center of cornea,  $13\frac{1}{2}$  mm. below the horizontal plane and  $\frac{1}{2}$  mm. to the temporal side of the vertical plane. Since the swelling had subsided the foreign body could be felt reasonably as located by the X-ray.

#### DISCUSSION.

Dr. Black considered the prognosis good. If the eye cleared he would not interfere, but if the vitreous grew cloudy he would try to get the foreign body.

Dr. Bane thought the impact had caused the retinal and vitreous changes.

Dr. Jackson considered it better to remove the foreign body although it was doing no harm now, and he would test for malingering, and would expect the vision to improve.

Dr. Stevens would leave the shot alone as it was doing no harm. He recalled two cases in which no harm resulted from leaving the shot in situ, and said it was often encysted.

#### Traumatic Cataract and Siderosis.

Dr. G. H. Strader stated that in a man of 32 whom he had formerly presented to the Society, he saw no improvement in the ocular conditions until he relieved maxillary and ethmoidal empyema by operation about a year later. The inflammation cleared in a few weeks and the lens absorbed. After dissection, vision rose to 20/30.

GEORGE F. LIBBY,

Secretary.

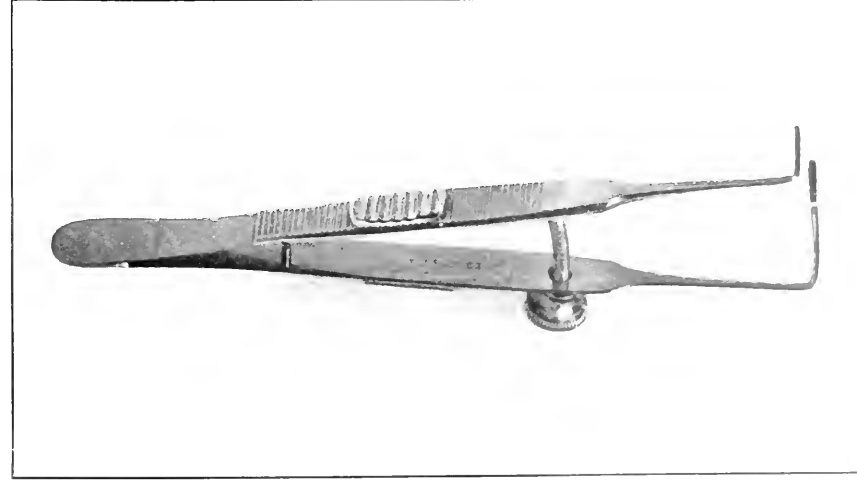
## OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

An ordinary meeting of the society was held at the Medical Society's rooms, Chandos street, W., on Thursday, October 21st, 1909. Dr. G. A. Berry, the new president, occupied the chair.

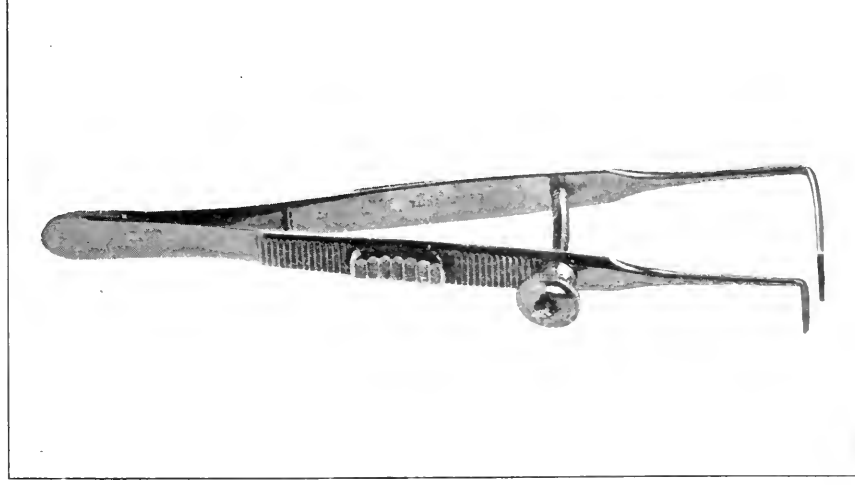
Mr. N. Bishop Harman showed a new retractor for use in excision of the lacrimal sac, also two sisters with symmetrical discoid cataract. Mr. Brooksbank James showed a case with very unusual fundus appearances, and Mr. Herbert Fisher a case of marginal bilateral-keratectasia. Mr. Grimsdale showed a case of retraction of the eyes associated with the act of winking.

The president then delivered his address. He was more and more impressed with the truth of the maxim "*Quot homines tot sententiae*," and it was often educating and inspiring to realize the steps which had led to the great advances, and to get some idea of the manner of thinking and the surroundings of the authors. Nothing was so fascinating as the history of medicine. More than mere rediscoveries could be claimed for present advances; they were new and were logical deductions from carefully collected observations and experiments, not merely irresponsible speculations. The practical man was an empiric, but now the science of medicine had overtaken and greatly outstripped the art. There were many reasons for treatment lagging behind; practical therapeutics was one of the most imperfect of the arts. Surgery was perhaps least subject to individuality, and it was in that domain that the most advances had recently been made in treatment. But the advances following upon antiseptic surgery had led to an over-confidence in, and too frequent recourse to, surgery, and that tendency was no doubt favored by the public. That, however, was a mere swing of the pendulum, and would right itself in time. The eye was an organ whose functional activity could be estimated with every refinement. The possibility of suggestion in treatment did not occur to most patients, and one sometimes received most congratulation from those for whom one was conscious of having done the least.

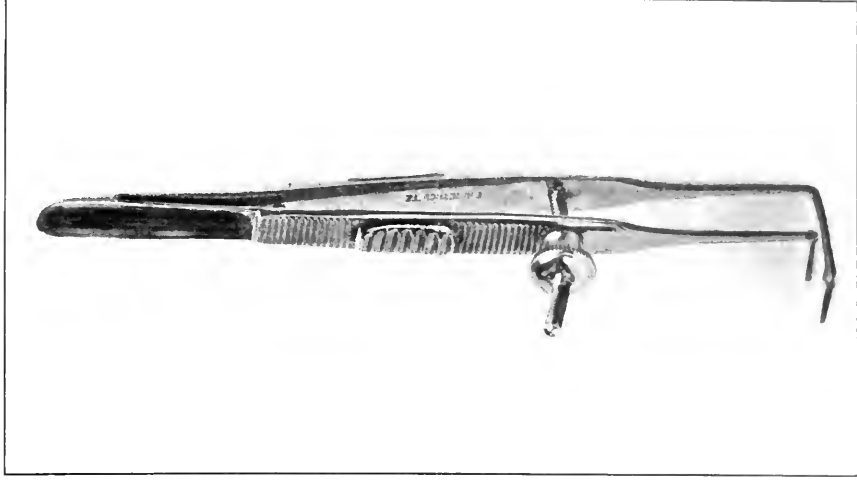
There had not been anything commensurate with the advance of general surgery in the sphere of ophthalmology, though there had been greater skill, and the incisions had been cleaner than formerly. The eventual results of operations for cataract were probably the same in all cases. Dr. Berry then entered into a his-



The Improved London Tacker.

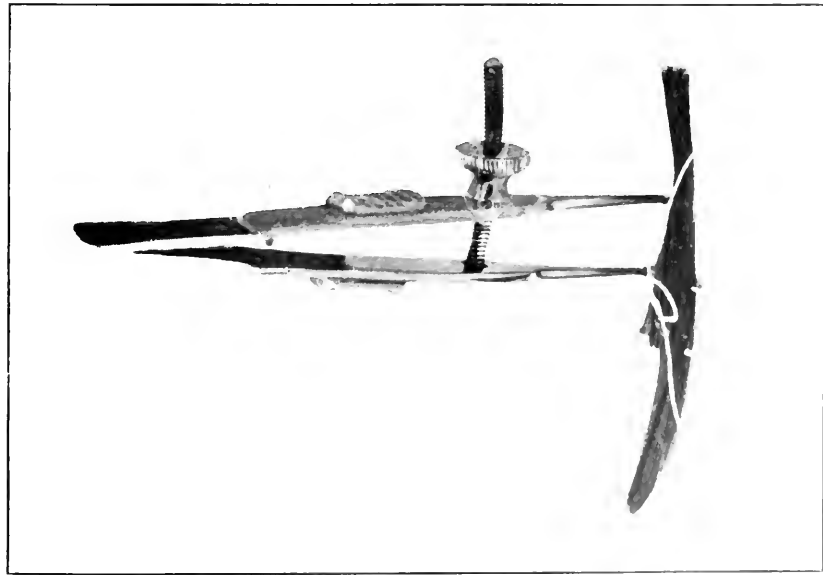


The Improved Tendon Tacker.

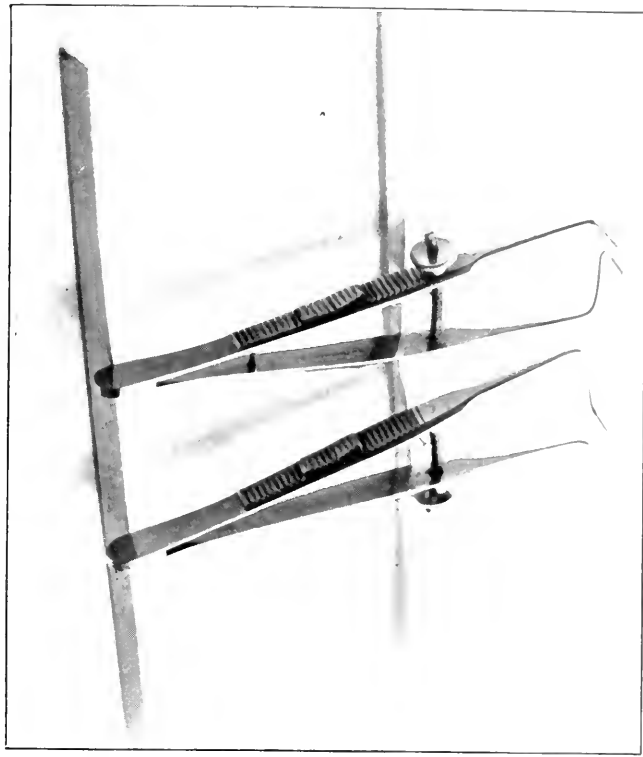


The Improved Ophthalmic Tacker.





Forming the Tuck. Suture in Place.



The Old Original Tuckers. Ophthalmic Record, September, 1899. Two-thirds.

To illustrate article "Tendon-Tucking Operations," by D. Milton Green, M.D., December, 1900, issue of Ophthalmic Record.



torical retrospect of the methods of operating for cataract, and asked whether finality had yet been reached in the matter. He thought it would be admitted that something better was at least conceivable; there might be cure without operation, and even prevention altogether. And, useful as iridectomy was in the treatment of glaucoma, advance might yet be made in that respect. Nearly all the surgical interference in use for trachoma had their prototypes in ancient times. The treatment which gave the best results in the more severe chronic cases was now often employed in cases where it became an unnecessary mutilation. Dealing with the incursion of the optician into the realm of ophthalmology, he deprecated that because he could not detect or appreciate underlying eye disease. Dr. Berry went on to speak of the history of the invention of spectacles, as well as of the history of mydriatics, which latter means he thought had been much abused. The advantages of inducing hyperaemia had long been known, and now Bier had placed the matter on a scientific basis. In conclusion, he said he was a believer in a great future for medicine, both preventive and remedial; treatment by sera and antibodies and every stimulant form of remedy opened up a vast vista for the future.

Mr. Priestley Smith read two papers: (1) A note on the making of pedigree charts, (2) A pedigree of congenital discoid cataract. The latter almost exactly confirmed Mendel's law. The president and Mr. Nettleship congratulated the author on his papers. Mr. Nettleship discussed Mr. Smith's proposals for recording pedigrees, and said the second paper dealt with the largest pedigree of that disease which had ever been recorded. Mr. R. W. Doyne said he had observed "Coppock" cataracts for the last twenty-six years, and twenty-five years ago he worked out a long series of three generations, all of which were handed over to Dr. Ogilvie when he elaborated his paper. He had formed a rather strong suspicion that as the years advanced the cataract became more dense. In the "Coppock" cases the most advanced of all was one of the three brothers, and the faintest were in the young children. One girl, now a schoolmistress, he examined when she was quite a child, and saw her again recently, and he thought the condition had progressed. Mr. Herbert Fisher said that recently a case of discoid cataract which was under Mr. Nettleship sixteen years came to hospital, and there was now no further deterioration in vision.

Mr. Treacher Collins questioned the advisability of using the term discoid cataract for these cases, as this form of cataract was known as the "Coppock." Discoid had been applied to the form of opacity in which the lens was flattened from before backwards. Mr. Priestley Smith, in reply, said it would be very useful if those following up the subject were to give the names of the people as he believed there was a migration to towns, and some supposedly isolated cases might be shown to be connected.

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## OPHTHALMIC SURGERY.

BY CHARLES H. BEARD, M. D.,  
CHICAGO, ILL.

This book contains 614 pages, has 9 plates, showing 100 instruments, and has 300 other illustrations. Cloth, \$5.00.

At the present time this is the best book on Ophthalmic Surgery in the English language. The author is a practical surgeon and his book is essentially practical in its nature. There is no difficulty in understanding his plain, comprehensive language, and a perusal of the text will give the reader a thorough understanding as to the methods of performing each and every operation. His descriptions are usually well supplemented by new and illuminating illustrations and there is no reason why anyone should remain in darkness as to ophthalmic surgery, who will take the pains to carefully read this book. His pictures of instruments are beautiful and his descriptions as to how instruments may be best cared for is a feature of great value and something not often found in books of this nature. We can heartily recommend this excellent, practical, useful and readable book to anyone who desires information on the subject of Ophthalmic Surgery. Published by P. Blakiston's Son & Co., Philadelphia.

ALLPORT.



## Notes and News

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Dr. Synlislawski of Lemberg has received the title of professor.

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Dr. A. Natanson, privatdozent in ophthalmology in Moskau, is dead.

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Dr. A. Neuschüler has qualified in ophthalmology in Rome, Italy.

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Dr. Eugene Smith of Detroit, Mich., has returned from a two months' trip to Europe.

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Dr. S. Lewis Ziegler of Philadelphia has recovered from a serious attack of erysipelas.

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Dr. G. W. Swift of Chicago left December 19, '09, for a course of post-graduate work in Vienna.

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Dr. Francis Lane of Chicago suffered a painful injury to his arm from a fall on an icy sidewalk.

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Dr. William Brashear Pusey of Louisville, Ky., died at his home December 6, at the age of 43 years.

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Dr. J. A. Pratt of Aurora, Ill., was elected president of the Aurora Medical Society at the December meeting.

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Dr. John M. Wheeler was recently appointed assistant ophthalmic surgeon to the New York Eye and Ear Infirmary.

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Dr. John Millette of Dayton, Ohio, was recently elected president of the Starling (Ohio) Medical Alumni Association.

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Dr. Stanculeanu has been appointed to succeed Manolescu as professor of ophthalmology in the University of Bucharest.

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Dr. Richard Kimmel, assistant to Professor Seller in the University Eye Clinic at Erlangen, has qualified in ophthalmology.

H. Neville Crowe of Worcester, England, has been made assistant ophthalmic surgeon to the Worcester Ophthalmic Hospital.

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Dr. Albrecht Collasowitz has received an appointment as ophthalmologist on the staff of Alexian Brothers Hospital, St. Louis, Mo.

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Mr. Herbert Emmerson has been made honorary ophthalmic surgeon to the Chesterfield and North Derbyshire Hospital, England.

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The Freie Universität in Brussels conferred the honorary degree of Doctor upon Duke Karl Theodor, who died December 1, 1909.

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C. A. S. Dalglish is to succeed T. P. Hapgood as honorary ophthalmic surgeon to the Sunderland and County Durham Eye Infirmary.

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Dr. Chas. L. Thomas of Logansport, Ind., was seriously injured in an automobile accident December 6, and was taken to St. Luke's Hospital, Chicago.

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At the last meeting of the board of directors of the Chicago Eye, Ear, Nose and Throat College, Dr. E. A. LaMothe was elected professor of ophthalmology.

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Thomas Henderson, celebrated for his original work on glaucoma, has received an appointment to the staff of the Nottingham and Midland Eye Infirmary.

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Prof. Dr. Uthhoff, professor of ophthalmology and director of the University Eye Clinic in Breslau, Germany, has received the Order of the Crown of the Third Class.

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The resignation of Dr. Otto Schirmer of Strassburg, Germany, from the teaching staff of the University of Strassburg, has been accepted. Dr. Schirmer was professor and director of the university eye clinic.

D. C. Lloyd-Owen, J. P., has received the appointment of consulting surgeon to the British Ophthalmic Hospital in Jerusalem, to succeed R. Brudenell Carter, who has resigned.

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Dr. B. Hudson-Makuen of Philadelphia was elected president and Dr. John Corser of Scranton, Pa., was elected secretary of the Medical Society of the State of Pennsylvania.

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Malcolm McHardy has resigned as honorary senior surgeon to the Royal Eye Hospital, London, S. E., and has been made honorary consulting surgeon. Sir William Collins will succeed Mr. McHardy.

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The president of the London Board of Trade, Mr. Tennant, has instituted an inquiry into the various color vision tests employed by the principal countries of the world in their merchant marine services.

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Geh. Prof. Dr. Uhthoff of Breslau is the third to be called to the post in Vienna left vacant by the death of Professor Schnabel. It is extremely unlikely that Professor Uhthoff will seriously consider the offer, as it will be five years at least before the new quarters will be ready and the old ones are impossible.

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Prof. Dr. Th. Saemisch is dead at the age of 76 years. His entire active life was spent in the University of Bonn. Ophthalmology loses one of its foremost figures by his death. He will probably be most widely known from the connection of his name with that of v. Graefe in the Graefe-Saemisch Handbuch.

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Dr. J. Howard Jones of Newport, England, in his first annual report on the medical inspection of the school children in his borough, states that out of 2,498 children examined 245 had diseases of the nose and throat, 165 defective vision and 37 defects of the ears.

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In an article which appeared in the *Revue Générale d'Ophthalmologie* for June, 1909, Eloni Pacha, formerly chief inspector of the government schools in Egypt, gives his views upon the prevention of blindness and the amelioration of the lot of the blind in

Egypt. In 1883, when the first work was begun, 85 per cent of the scholars had trachoma and 75 per cent suffered also from various other eye diseases.

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The Chicago Ophthalmological Society held its annual meeting and banquet at the University Club on January 3, 1910. Dr. Wm. A. Fisher was elected president; Dr. E. V. L. Brown, vice-president, and Dr. Willis O. Nance was re-elected secretary-treasurer. Dr. Thomas A. Woodruff was elected counsellor to the Chicago Medical Society and Dr. Brown Pusey counsellor to the Chicago Ophthalmological Society.

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The Chicago Eye, Ear, Nose and Throat College held its annual stockholders' meeting on December 1, 1909. The officers reported a very satisfactory condition of the institution's affairs, the addition of a large ward, and several private rooms, which in the aggregate doubles the capacity of the hospital. Drs. W. A. Fisher, president; A. G. Wippert, vice-president; J. R. Hoffman, secretary; Thomas Faith and H. W. Woodruff were re-elected directors for the ensuing year.

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Thomas Spencer Meighan, senior ophthalmic surgeon to the Glasgow Eye Infirmary and lecturer in ophthalmology in Anderson's College, Glasgow, died suddenly of apoplexy on October 15, 1909. Dr. Meighan had just left the infirmary, where he had been operating, when the seizure occurred. Dr. Meighan did not contribute extensively to the literature of ophthalmology, his chief writings being on a new symblepharon operation and optic neuritis of intracranial origin.

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The estate of Miss Edith Rebecca Lord of London, Eng., has been entirely devoted to the interests of the blind. As far as the resources will allow, about \$12.40 a week is to be given as a pension to blind individuals of 35 years or more of age, who became blind after their twentieth year and who have never begged upon the streets and are otherwise of good character. Five thousand dollars has been placed in trust with Gardiner's Trust for the Blind, the interest of which is to provide for an annual concert and dinner, to be known as the "Norman Lord Dinner."

The 1908 report of the Manchester Education Committee shows great advances in the work of caring for defective school children. The additional expense in the way of taxes to carry on this work is regarded as an economy when it is considered that the present care of the children prevents the development of paupers and criminals. During the year 1908, 189 children were excluded from the schools on account of infectious diseases, 26 of which were for diseases of the eye or ear. The sight was tested in 32,593 children and the parents were notified in 2,064 cases that medical advice was needed. It was necessary in many cases to threaten exclusion from school before any attention was paid to the children's needs. In 336 cases the committee supplied the glasses and the parents paid as much of the cost as they could.

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The first number of the new eye journal, Archives of Comparative Ophthalmology (Archiv für Vergleichende Ophthalmologie), has just arrived. It is edited by Dr. Gustav Freytag, privatdozent for ophthalmology at the University of Munich, and published by S. Hirzel, Leipzig. The first number bears the date of September 15, 1909. The following are collaborators: Professor Angelucci (Neapel), Professor Axenfeld (Freiburg i. B.), Professor Bach (Marburg), Professor Bayer (Wien), Professor Bernheimer (Innsbruck), Professor Chun (Leipzig), Professor Eberlein (Berlin), Professor Ellenberger (Dresden), Professor Frank (München), Professor Greeff (Berlin), Professor Gullstrand (Upsala), Prof. R. Hertwig (München), Professor Hess (Würzburg), Professor Hesse (Berlin), Dr. Jessop (London), Professor Königshöfer (Stuttgart), Professor Lang (Zürich), Professor v. Michel (Berlin), Professor Rabl (Leipzig), Professor Römer (Greifswald), Professor Rückert (München), Professor Sattler (Leipzig), Professor Schleich (Tübingen), Professor Uthoff (Breslau), Professor Zietzschmann (Zürich), Professor Komoto (Tokio), Professor Schlösser (München), and others. For the United States Dr. Casey Wood of Chicago will act as collaborator.

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To Ophthalmologists:

At the late meeting of the Ophthalmic Section, A. M. A. (eleven hundred members), the undersigned were appointed a committee to promote *a working knowledge of simple refraction* among family physicians.

It has secured abundant evidence that such knowledge has been acquired and is now used by many physicians, so proving that all medical men can do likewise, if they so desire.

But that the practice may become uniform, it is necessary that the State Boards of Registration require it for license and medical colleges teach it in course.

Recognizing its importance, the Michigan State Board of Registration, on February 12, 1909, notified medical colleges, that thereafter, it would grant licenses to practice only to such applicants, as demonstrated, on a living subject, with simple spherical lenses and test types, their working knowledge of simple refraction.

Your committee is confident that every State Board of Registration would make a like requirement if it grasped the situation, and then all medical colleges would qualify their students therefor.

Recalling the fact that our system of medical education makes no adequate provision for training the family physician in simple refraction, and that it be impossible for experts to meet the needs of all the people in this respect, it is plain that this class of cases had no source of relief other than the optician. But if the state boards require a working knowledge of simple refraction for license, the needs of all the people will be fully met by qualified physicians, and the optician resume his normal vocation as a spectacle merchant.

Recognizing your great influence in medical affairs, and assuming your vital interest in enlarging the field of family practice, your committee confidently ask your active endeavor to persuade your "State Board of Registration" to require "a working knowledge of simple refraction" from each applicant for license.

Each member of your committee stands ready to assist you to a fuller understanding of the situation, or to co-operate with you in seeking its relief. Sincerely yours,

LEARTUS CONNOR,  
Detroit, Mich., Chairman.

A. R. BAKER,  
Cleveland, Ohio.

J. THORINGTON,  
Philadelphia, Pa.

91 Lafayette boulevard, Detroit, Mich.

# THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS  
OF OPHTHALMOLOGY

VOL. XX

CHICAGO, FEBRUARY, 1910

NO. 2, NEW SERIES

## THE SMITH OPERATION—AN INTRODUCTORY NOTE.

When Major Smith and several of his Jullundur pupils agreed to write for the OPTHALMIC RECORD their experiences of the extraction of Cataract in the Unruptured Capsule, it was felt by the editorial staff that the importance of the subject justified the devotion of one or more numbers of this journal to the publication of their reports.

In the first instances the readers of the RECORD may, almost without exception, be said to form not only an interested, but an unprejudiced jury before whom the advocates of this new (or practically new) procedure may with confidence lay their case. Ninety-nine per cent of them are ignorant of the technique of the operation as employed in Jullundur City, or, like the writer of this editorial, their experience is confined to its employment in half a dozen cases—an entirely negligible fact so far as concerns any conclusions worth considering.

Moreover, Smith and his pupils claim, and the contention seems reasonable, that only those who have done a large number of these operations under the eye of an experienced teacher, are competent to express an opinion as to its real value, or to pass upon the objections raised by its opponents.

The pretensions of the modified Pagenstecher method, which we have designated—and we believe properly so—the Smith operation, if its well known reporters are to be credited, represent the most important contribution to the technique of cataract extraction that has been made since the days of Daviel.

Whatever reception these claims may be given in other countries, we feel certain that in America they will be treated entirely upon their merits. Fortunately, we have personal knowledge of the high standing, marked ability and practical character of the American contributors to this symposium and we know that there is no reason to doubt either the competency or the honesty of the others. Hence, we may regard these contributions as a reliable basis upon which, in the course of time, calmly and without prejudice to build our own conclusions.—(C. A. W.)

## EXTRACTION OF CATARACT IN THE CAPSULE.

By MAJOR HENRY SMITH.

JULLUNDUR PUNJAB.

Indian Medical Service.

In 1750 Daviel says: "Mais ce n'est deternnement que dans le cours du voyage que j'ai fait a' Mannheim poury traiter, S. A. S., Madame La Princesse Palatine de Deuxponts, d'une ancienne maladie qu'elle avait a l'oeil gauche, que je pris la resolution de ne plus desormais operer la calaracte que par extraction du cristallin." And elsewhere he says: "J'ouneris la comee comme je l'ai explique ensente en portant la petit spatule dont j'ai digu Jarle sur la Jartie superieure de la Cataacte ji la detachai et je la tirai *\*en morceaux* hors de l'oeil avec cet instrument."

Quite recently, on the complete operation, some people fancy the term "Expression of Cataract." The term "Extraction of Cataract" was used by Daviel, (its author), as above quoted for the capsulotomy or partial operation, and has been the recognized and undisputed term for that operation up to the present day.

The term "Extraction in the Capsule," or "in der Rapel," is the term used by the Pagenstechers which, in their case, was a veritable extraction by a spoon. Extraction in the Capsule is the term I have used so far, and it distinctly implies the complete as distinguished from the partial, or capsulotomy operation. The operation I do, or which anyone else does, is not invariably a simple expression. The extra capsula operation of today is no more expression than is the capsulotomy operation. If we have to change one term, we have to change both. Extraction having a definitely understood and time honored meaning, I see no valid reason for altering it as applied to either operation.

With regard to historical aspect of extraction in the capsule it has been the ambition of ophthalmologists since the days of Daviel to remove the lens entire. Attempts had been made by several men, but all prior to the work of the Pagenstechers, in the decades 1860, 1870, and 1880, have been relegated to a position hardly even historical. The operation of the Pagenstechers implied the introduction of a spoon (the mouth of which was about the diameter of the lens) into the vitreous behind the lens and the lifting out of the lens in this spoon (vide annals d'oculistique lxxvi, page 126, 1871).

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Italics in above quotation are mine.



I think I am not far wrong in saying that this procedure is also relegated to a historical position on account of the almost, if not universal occurrence of escape of vitreous as associated with it, and on account of the introduction of this large spoon into the vitreous which would, in my opinion, enormously increase the percentage of cases which would become septic. From some papers and correspondence recently published in the *Journal of the American Medical Association*, it is evident that Pagenstecher has ceased to practice this spoonial operation, and that he performs an operation closely allied to that which we do at Jullundur. The first man, in my opinion, to extract the lens in its capsule, by manipulation applied to the exterior of the globe as a systematic operation, was Malronez, of Amritsur Punjab. As far as I know he has himself published nothing on the subject. The only paper published from his clinic was a paper read at the Indian Medical Congress of 1894, at Calcutta, by his assistant, the late Rai Bahador Mehr Chaud. Their operation consisted of a lower section without iridectomy. The speculum was retained in position. A scoop or strabismus hook was applied at the upper border of the cornea till the edge of the lens presented itself in the wound. Then counter pressure was applied by a curette below the incision and when the lens was nearly half out of the wound of pressing on the globe with the orbicularis muscle. After the pressure with the thumb was applied to the globe through the upper lid and counter pressure applied below the wound on the sclerotic with a scoop. When two-thirds of the lens came out of the wound pressure was again removed and the patient directed to look towards his feet, when in most cases the lens slipped out. In cases in which expulsion of the lens was retarded, it was completed by the aid of a scoop or a pair of iris forceps.

The above is substantially a quotation. I have never seen Malronez do this operation, and I have never done it myself, but after an experience of now about 23,000 cataract extractions, over 20,000 of which have been in the capsule, I have the following objections to it: In the first place, in extraction in the capsule with a lower section there is much greater liability to escape of vitreous than there is with an upper section. In the second place, when the eye is bandaged up the wound is just behind the optic commissure, the position in which it is most liable to become septic. In

the third place, section is not in a cosmetic position. In the fourth place, with a patient who is in the slightest degree nervous, the speculum in use during expulsion is objectionable, as we can never determine when he may contract the orbicularis and squeeze out both the lens and vitreous, the speculum affording him extra power of pressing on the globe with the orbicularis muscle. After the speculum has been removed, if all goes well this operation is satisfactory apart from the difficulty of replacing the iris, but if the capsule bursts or if vitreous presents when the lens is one-third or half way out, the operator is almost powerless to complete the operation satisfactorily. Yet with all these drawbacks Maltronez's operation stands out as a landmark overshadowing all previous efforts at intracapsular extraction preceding it.

When I had had considerable experience of the capsulotomy operation at a time when I was ruled by the doctrines of the schools as regards the grave results following escape of vitreous, I observed in a number of instances, of nervous patients who shot out the lens in its capsule with some vitreous, on completion of the incision that the results were all that could be desired, with no complications whatever. On considering the cause of iritis, irido cyclitis, and sepsis following the ordinary operation, I was of the opinion that these conditions were due to the liberation of organic matter deprived of its vitality in the aqueous chamber which had to undergo absorption through a process of chemical metamorphosis, and that such substance in an eye was as liable to be as poisonous as blood left in an ordinary surgical wound, though both the lens matter in the one case and the blood in the other might remain sterile, though very liable in either case to become septic on the introduction of germs from any source. The capsule itself did not seem to me to be a harmless body, laps of it which so often make their way into the wound I observed to be the means of preventing immediate union and to act as a drain between the conjunctival sac and the interior of the eye, and thus to be an inroad for septic germs. The conjunctiva, though sterile at the time of operation, cannot be assumed to remain sterile for as many days as are required for the union of the lens capsule with the wound. On further experience I am now of opinion that the combination of lens capsule in the wound and the liquefying debris of lens matter in the aqueous chamber are of the nature of a chemical irritant, causing iritis and

irido cyclitis, and also interfere with the normal healing of the wound, and that these factors taken together account for the fact that in India the capsulotomy operation is followed by an incomparably greater mortality of eyes from all causes than is the case with the intracapsular operation. The accidental case above referred to and the above considerations led me to make the resolution ten years ago (1899) to imitate this accident. I commenced to press out the lens with the speculum in position (I have always used an upper incision unless for special reasons), but I very soon learned that the amount of escape of vitreous with the speculum in position would be prohibitive. I now got my assistant to draw down the lower lid with his thumb on the face and to retract the upper lid with a large strabismus hook. This rendered the proceeding more feasible. After some cases I observed that when the upper lid was retracted thus towards the brow the pressure was not as well taken off the eyeball as when it was lifted straight forward (assuming the patient to be in the vertical position for purposes of description) as indicated by the manner in which the cornea falls back and the eyeball becomes flaccid. I later on observed that when the assistant, also with the fourth and fifth fingers of the hand using the strabismus hook, draws back the brow at the same time that he not only further takes pressure off the eyeball, but that he more thoroughly exposes the conjunctival sac, and the field of operation, and that by this method the patient was absolutely under our control, and that we could operate without inconvenience with the eye rolled up in the position of sleep. The influence of this manipulating the brow while lifting forward the eyelid is extremely marked in cases in which the conjunctival sac has become contracted as the result of trachoma. By this procedure on the part of the assistant we have not to ask the patient to assist us in any way. I observed that with the eye rolled up in the position of sleep there was less liability to escape of vitreous than in any other position. This is the position our nervous patients insist on giving us and the position which patients as a general rule to give us spontaneously. The importance of being independent of our patients is very great. We can operate without giving them a single direction: every word we speak to them in the way of asking them to do particular movements of the eye contributes to depriving them of any little nerve they may possess, even if we succeed in getting them to do what we want.

The importance of the proper performance of the assistant's duties, as above detailed, cannot be overestimated. I may here say that an assistant is not efficiently trained in this art in a few days. With a competent assistant acting as above described, if the capsule bursts when the lens is half out we can deal with it without asking any favors of the patient and without stopping to get an assistant to help us. If vitreous makes its appearance before the lens is out, we similarly proceed direct. With the pressure taken off the eyeball by the assistant in this manner, escape of vitreous is infinitely less likely to occur than by any other method yet known. By this method the iris can be replaced without haste and with infinite care. I can now confidently say that by excluding complicated cases I could extract cataract in the capsule with escape of vitreous in not more than two (?) per cent on large figures, and taking complicated and uncomplicated with escape of vitreous not exceeding 5 per cent of the cases. Complicated cases are very much more numerous in India than in America or Europe on account of the prevalence of trachoma. The technique of the operation in part above described and to follow, I developed absolutely independently of any one and without a suggestion from any one. To those who have seen me or pupils whom I have trained perform this operation, the technique renders it distinct from any proceeding previously recorded as one operation in surgery is distinct from another whose object is the same. Whether it is a more satisfactory method or not than any previous attempt at extraction of the lens in capsule, I submit will be determined by the relative escape of vitreous, the ease by which the iris is replaced, the amount of intraocular instrumentation and finally the ease and certainty with which the lens is extracted, all of which contribute to the final result. I do not claim to have been the first to extract cataract in capsule as a systematic operator. I never did claim such. I do claim that my technique was developed independently of any one.

**THE OPERATION:** Children and juveniles are not admissible owing to the fact that it is almost impossible to dislocate the lens in them. All other cataracts can be extracted in capsule. The eye being prepared (atropine is not necessary), the spring speculum is inserted without fixation, the operator lifts forward the speculum with his one hand and draws back the brow with the other, thus thoroughly exposing the whole conjunctival sac. The assistant

douches out the conjunctival sac from a reservoir four to five feet above the table, which gives sufficient pressure to thoroughly flush out mucus and other substances from the exposed sac for this purpose. I use one in two thousand corrosive sublimate solution, though I see no reason why normal salt solution would not do equally well, as its effects seem to me to be merely mechanical. I use the sublimate solution as I am certain that it is sterile, whereas, with my Indian staff, I could not be certain that salt solution or distilled water were what they were supposed to be, that is, that I cannot be certain here of my orders being faithfully carried out. The eye is fixed with the usual forceps, the Graefe's knife is inserted in the sclero cornea and makes its counter puncture in the sclero cornea of the opposite side; the incision is half or nearly half the circumference of the sclero cornea. The knife is driven through to the heel, the handle being lowered as it goes through so as to elevate the point to avoid the nose or eyelid. It is used after it makes the counter puncture to cut as it goes through. If it is the length of a new Graefe's knife and in good order, the incision should be completed with this thrust. If not completed a single draw back should complete it without any sawing. We have thus an ideally clean cut wound. This incision I finish in the cornea and make with a sweep so that the edges of the corneal wound will be cut as nearly as possible at a right angle to the surface and not be obliquely sliced, which latter facilitates overriding and which is the cause of a good deal of unnecessary astigmatism. An iridectomy may or may not be done according to the fancy of the operator, but my advice to a beginner is to do an iridectomy. There is probably a little more liability to incarceration of the iris in this operation than in the capsulotomy operation, and incarcerations are more liable to occur where there has been escape of vitreous than where there has not, hence, I advise beginners to do an iridectomy. Incarcerations of the iris in this operation have a distinct connection with meddlesome dressing, and meddlesome inspections. These cases without some special indication should not be dressed or inspected earlier than the expiration of eight clear days or even ten clear days from the time of operation, when no further dressing will be required. The maximum space we can obtain from incisions for cataract is half the circumference. The segment of the circle being equal, it is the depth in the direction of the sclera from which

## MAJOR HENRY SMITH.

we obtain the space. In this operation the novice owes most of his failures and most of his difficulties to not making a sufficiently large wound, and wherein his wound fails most is that it lacks in depth towards the sclerotic. Capsules bursting are very largely due to this cause, when the incision is finished and the iridectomy performed (if the operator decides to do one) the speculum is removed, the assistant takes charge of eyelids and brow as above described, and the operator proceeds without speaking to the patient. In the case of an immature lens or of a hard cataract, with a spatula in the operator's left hand ready for use if required, he proceeds to press back with the point of a strabismus hook towards the optic nerve, the point of the hook being placed over the lower third of the lens, the pressure is steady and the point of the hook should not be moved until the upper edge of the lens tilts forwards and is thus seen to be dislocated, having been made to swing round on its transverse axis. The moment the lens at the wound is seen to be dislocated, the pressure through the point of the hook is gradually turned more and more towards the wound, pressure being maintained all the time so as to keep the lens up to the sclerotic margin of the wound, the pressure with the hook becoming gradually lighter and lighter and the hook gradually sliding after the lens until the cornea is folded beneath it, at this stage it is delivered. In a low tension eye the beginner should follow up the lens with the spatula in addition to the hooks, as with it he can maintain a sufficient tension in the eye and thus allow his right hand instrument to follow up the lens more lightly. In rare cases of low tension eyes he might find it advantageous when the lens is half way out to apply a little counter pressure above the wound with the spatula. In the case of intumescent lenses and morgagnian cataracts in which the nucleus is small and is surrounded by a considerable amount of soft disintegrated lens matter, the capsule is generally extremely delicate and if dislocated in the manner above described is exceedingly liable to burst when the lens is half way out, allowing the nucleus or a considerable amount of lens matter to escape and to be itself retracted with a considerable amount of lens matter. The operator is then placed in a difficult position, the capsule being dislocated at the wound. To overcome this difficulty I observed that lenses of this class occasionally turned a half somersault, dislocating opposite the wound, and that having done so, the capsule very seldom burst and when it did burst it was attached

only in the neighborhood of the wound and was not drawn back, and that under these conditions it was very easily caught with a pair of dissecting forceps and removed entire without inserting any instrument into the eye. I proceeded to imitate this accident with this class of cataract, first by applying pressure over the ciliary region, but soon desisted as I had a few cases of expulsive hemorrhage from choroidal detachment which I attributed to my manipulation of this region. I then commenced to press with the point of the strabismus hook sufficiently deep over the lower border of the lens to get a point d'appie beside the ciliary ridge and to put traction from this point d'appie in the direction of the patient's feet, by which I found that I could almost invariably make these lenses to dislocate below first and to turn a half somersault. This pressure and traction are over the zonule. As soon as the lens turns up into the wound, showing that it is freely dislocated below, the operator should cease to make traction towards the patient's feet and make direct pressure first backward, then backwards and upwards, and finally more and more towards the wound, folding the cornea beneath the lens until it falls over on the outside of the cornea. At this stage the capsule has not been dislocated from the zonule in the neighborhood of the wound. The hollow of the curve of the strabismus hook should now be made to sweep along between the lens and the wound to complete the detachment. The beginner while using the hook thus would do well in all instances to put the spatula on the cornea so as to keep up sufficient tension in the eye to prevent the lens from slipping back into the eye in this later stage whether it be of hard or of soft consistency, as a lens is occasionally liable in this late stage to slip back into the eye and to be then *exceedingly difficult to remove*. By this process there should be very few accidents, the intumescent and morgagnian cataracts above mentioned leaving a small nucleus in a capsule containing a large amount of soft matter. The nucleus does not stand in the way of the whole cataract in capsule moulding and turning over. The hard cataract and the immature cataract we cannot cause to mould in this fashion, and hence they cannot be made to turn over in the same manner in consequence. The hyper-mature cataract is, of all cataracts, the most difficult to dislocate. It has become shrunken, its capsule has become thickened, and its attachments have become firmer than in the case of any other senile cataract. The operator in this case should proceed with the

strabismus hook as in the case of immature and hard cataract. The spatula in his left hand should be in position at the margin of the wound to drop behind the lens the instant the edge of it is seen at the wound, as otherwise pressure on the cornea will only squeeze out vitreous, the lens refusing to move. It should be dropped almost straight down into the eye, the back of it being kept throughout against the sclerotic margin of the wound. The lens should be pressed against it with the hook from the outside and thus made to slide up along the inclined plane of the spatula. The spatula should be kept steady in position, care being taken to not use it as a means of lifting out the lens. If used to lift out the lens, the capsule is very liable to be ruptured and vitreous to escape behind it at the same time. It does not require to be inserted behind the lens to more than a trifling distance; it is thus used to prevent the pressure from the hook on the outside from putting objectionable pressure on the vitreous. The spatula for this purpose should have a slight curve and be about  $\frac{3}{16}$  inch broad and not sharp anywhere, so as to avoid the risk of injury to the capsule. A dexterous operator, if he follows these directions and the patient being fairly well behaved, will be able to extract hypermature cataracts thus with escape of vitreous in a trifling percentage of the cases. I believe that hypermature cataract is infinitely more common in India than in America or Europe, as in those countries patients have their cataracts extracted before they reach this advanced stage.

There is one other variety of cataract worthy of mention. It is a cataract the color of coarse white soap, a characteristic color when once seen. It is important to be able to recognize it, as we are now ready to deal with it. It is exceedingly difficult to dislocate. I do not think we meet with more than two or three per cent of this variety. When recognized the operator should proceed as in the case of hypermature cataract.

REPOSITION OF THE IRIS: The iris, being a sticky membrane, after the lens is extracted in capsule is found sticking to the sclerotic and in the angles of the wound. Whether an iredeotomy has been done or not its careful reposition in this operation is of the utmost importance. The assistant remaining in charge of the eyelids and brow as before, it will be observed that the cornea drops back and that the iris, not in the neighborhood of the wound, falls back on the vitreous leaving the aqueous chamber and the



space which the lens occupied vacant. With a suitable reposer the operator should release the iris from the sclerotic and from the angles of the wound and thus allow it to drop back in that neighborhood also onto the vitreous. When this is properly done the operator is able to see back to the very base of the iris all round in the neighborhood of the wound.

The pupillary margin of the iris when this is done will be seen to have assumed its normal position. There need be no hurry about the reposition of the iris. It can and should be done with the utmost care. If this is carefully done and the eye carefully dressed up and not redressed until after the eighth day, and the patient behaves sensibly, complications of the iris in the wound will be seldom seen. Complications of the iris in the wound are generally due to not replacing it properly and to meddlesome dressings and meddlesome inspections and foolish conduct on part of the patient (such foolishness being extremely common in India).

After the iris is replaced, if a drop of blood remain in the conjunctival sac, it may safely be left there. The introduction of solutions at this stage has a distinct connection with inflammation of the membrane of Descemet, a membrane which, in my observation, tolerates no medicated solutions and no instrumentation, whereas, the external epithelium of the cornea tolerates an astonishing amount of friction. Though in this operation as above described there is very little friction, as the lens is generally very easily dislocated by the operator if the operator has acquired the knowledge of the exact spot on which to put his pressure and the exact direction in which to apply it.

The issue on which so many men have floundered in this operation is by not knowing that exact position and that exact direction. If vitreous escapes it should be snipped off with scissors and not left hanging in the wound as the stroma tends to act as a drain, preventing union. As iritis, iridocyclitis and sepsis are so exceedingly rare following this operation, the after treatment is almost nil. Atropine is not necessary.

I have been asked by a number of men my opinion on various devices recently published for dislocating the lens with an instrument inserted into the interior of the eye. Most of these are purely theoretical and not supported by practice—a few of them are supported by a few cases. I have no objection to any method which

will advance our art, but these methods seem to me to be very highly technical, if the lens is to be dislocated as desired, and require a highly trained pair of hands. In my own hands my impression is that with these instruments I would injure the capsule of the lens in an objectionably large proportion of cases, and that in these cases the result would be far from satisfactory. These procedures imply the objectionable introduction of instruments into the eye and consequently a greater liability to sepsis following: to injury of the membrane of Descemet and in unsteady hands, to possible injury to the ciliary regions and generally to laceration of the hyaloid membrane.

I have to express my appreciation of the manner in which the broadminded American ophthalmologist has taken up this subject. A number of whom have come half way round the world to Jullundur to see for themselves and to learn how to do this operation.

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### MALRONEZ'S OPERATION.

BY SENIOR ASSISTANT SURGEON HARI CHAUD.

AMRITSUR, PUNJAB.

I was Colonel Malronez's assistant before his retirement. I have done his operation on about 1,500 cataracts. To be brief: The spring speculum without fixation is inserted, the eye having been prepared in the usual way. The incision includes just less than half the circumference, the Graefe's knife is entered in the sclero cornea and the counter puncture is also in the sclero cornea. The incision which is an upper one is made with a single sweep, finishing in the cornea near its periphery; no iridectomy is done. The patient is now asked to look towards his feet and pressure is made on the sclerotic above the wound with a curette; the lens is thus dislocated at the wound. As soon as the edge of the lens has made its appearance in the wound through the pupil, the speculum is removed. The assistant then draws down the lower eyelid with his thumb on the face and with the fingers of his other hand draws back the brow and upper eyelid. The operator again asks the patient to look towards his feet and applies pressure on the lower part of the cornea with a curette and with another curette in another hand he makes counter pressure above the wound till the lens comes out. When the lens is out the assistant releases the eyelids and the operator draws up the upper eyelid by catching the eyelashes with his fingers, and adjust the iris.

# CATARACT EXTRACTION IN THE CAPSULE—THE JULLUNDUR PATIENT\*

BY DERRICK T. VAIL, M. D.

CINCINNATI, OHIO, U. S. A.

*Are the natives of India more prone to cataract than our own people?*

*Do their race and diet predispose to cataract?*

*Does cataract develop earlier among them than among us?*

*Are their cataracts more simple (less complicated) than ours?*

*What kind of cataracts prevail among them?*

*Are they better behaved while being operated upon than our patients?*

*Do they behave better after operation than our people?*

*Are they less prone to post-operative complications?*

*Do they require less care after operation than we?*

*Are they easily kept track of after leaving the hospital?*

*Is Smith inimitable as a cataract operator?*

*And finally, is the operation of extraction of cataract within the capsule as practiced by Major Smith better adapted to them than to us?*

These are pertinent questions that I feel called upon to answer and I feel qualified to answer them in a fair and honest way, having gone to Smith's Clinic at Jullundur, in northern India, for the express purpose of investigating the extraction of cataract within the capsule for my own satisfaction.

Since my return to America, I have been asked the above questions by oculists and others interested, and I have heard and read that there were many reasons, such as race, diet, habits, personal equation, immunity from inflammatory reactions following operations, and the unique skill of the originator of the method, offered as explaining the remarkable success of the operation as performed at Jullundur and that such favorable features do not exist in our country to insure success for this method of dealing with most all forms of cataract.

In the present article I shall deal with these questions, for I feel that the profession of America wants to know the truth and has a right to know the truth concerning these points. I shall be as brief as the subject will permit, leaving a full discus-

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\*Read before the Cincinnati Academy of Medicine, February 7, 1910.

sion of the above and other questions for a later and more exhaustive report.

(1) *Are the natives of India more prone to cataract than our own people?*

Yes. The effect of the tropical sun and heat as reflected from the sandy wastes of the Punjab, together with the more remote influences, such as heredity, occupation, faulty and insufficient food, etc., tend to produce cataract, especially when you consider the fact that they wear no protection or shades for their eyes, going about in the excessive heat of the sun with their eyes unprotected against direct and reflected glare.

This observation is borne out by the statistics of other Provinces of India, where the sandy wastes and absence of shade do not exist and where cataract is much less prevalent among the same races as inhabit the Punjab. Not alone is cataract more prevalent among the millions that inhabit the upper plains of the Ganges and Indus rivers, where sand and dust and sun are so much in evidence, but other ocular maladies, such as glaucoma, trachoma and optic atrophy, are so common as to constitute a scourge among the native inhabitants of these regions.

(2) *Do their race and diet predispose to cataract?* They are of the same race that we are—Aryans. Their resemblance to us in feature of face, body and limb is striking. They look like us save the one feature of color of skin. Their color is dark brown, but their hair is straight and their cast of features is the same as ours. Moreover, they are afflicted with the same diseases which we have in apparently the same degree—phthisis, syphilis, cancer, and in fact the entire category of diseases which seem to be peculiar to the Aryan races, they have in about the same proportion. One who visits that country and observes this interesting race is constantly struck with their marked resemblance in bodily feature to our own people. If this is true, we cannot declare that their race predisposes to cataract formation any more than our own, which seems essentially the same. In regard to diet, they are mostly vegetarians and non-alcoholics, and because of this it is asserted that arteriosclerosis, auto-toxæmias and certain prerverisions of the chemistry of the bodily juices, which are incident or chargeable to our mixed diet, together with the alcoholic beverages we indulge in as a people, do not affect their tissues as we are

affected; all of which would seem to argue that we, not they, would be more frequently affected with cataract—a disease which seems to be identified with old age, combined with faulty elimination and imperfect nutrition. People living in the tropics take to a fruit and vegetable diet by nature and physiologists have explained why persons living in hot countries demand more of this sort of food and less of meats and alcoholics than those living in temperate or northern countries.

Race and diet do not seem to predispose to cataract so much as exposure to light and heat by a nation of agriculturists, who live in an unprotected way in the glare of the tropical sun. The native merchant class, the native professional class, the native government employes and the native rulers, who adhere strictly to their castes and religion, subsisting mostly on a vegetable diet, do not seem to have cataract in larger proportion than our people of like pursuit; but the agricultural classes and those who expose their eyes to the direct and reflected light and heat of the tropical sun seem to be the ones principally affected with cataract.

(3) *Does cataract develop earlier among them than among us?* Yes; I should say on an average, ten years earlier. On this point there may be some doubt, because they look much older than they really are. Even our own farmers and out-door laborers look older than they are. Exposure and hard work in a bent posture seem to bring wrinkles and premature old age to the tillers of the soil and the so-called "common laborers" in our own country. This is even more noticeable among the native Indian toilers of the fields. I think every oculist becomes fairly expert in estimating the ages of individuals by appearances and I made a careful record of the *apparent* ages of ninety-nine patients affected with senile cataract, operated on at Smith's hospital at Jullundur. These cases were all operated on before I began my own series and I stood very close to the operating table where I could see everything at short range and made full and exact notes of these operations, together with the character of cataracts, the details of the operation, the behavior of the patients and all other points that came under my observation, including a careful estimate of the age of each person. Of these ninety-nine cases, thirteen were among women and fifty-one among men (making sixty-four persons; thirty-five were double cataract extractions). The average ages were as follows:

Among women, average age—55 years.

Among men, average age—59.9 years.

Upon being asked how old they were, they would invariably take off 10 to 20 years from their real ages with unblushing assertions that would win the admiration of those of us who think we are adept at falsifying concerning our real ages, and the mock sincerity of their declaration as to their ages, together with the pitiful evidences of old age they presented, was comical, to say the least.

I saw many old men and women of apparently 70 or 80 years of age with cataracts, but on the other hand, there were many more apparently under 50 and I would set down the average age of all the 1,000 or 1,200 cases of cataract which came under my observation at Jullundur during my stay there, as being about 56—fully 10 years younger than our average case.

(4) *Are their cataracts more simple (less complicated) than ours?* Owing to the remarkable results published in the past from Jullundur, the impression has gone out that the cataracts of the Punjab are the simple, uncomplicated, senile types which lend themselves to nearly certain success by any method of extraction. This is exactly diametrical to the facts. Complications are much more prevalent among them than among us. The material which comes to Smith's Clinic for operation is as unattractive from a surgical standpoint as any in the world. All kinds of complications are found in abundance. Trachoma is by far the commonest. In fact, trachoma is so universally prevalent that it is not rated a complication. I asked Major Smith what percentage of all the eye patients which came to him for various ocular troubles were affected with trachoma in one stage or another. He replied "fully 80 per cent," and I believe his statement, having seen dozens of eye patients file in one after the other presenting trachoma in some stage. Of course, many of these did not have cataracts, and there were many cases of cataract which showed no evidence of trachoma. I saw a great many operated on for cataract who did have trachoma in the last stage, and the series done by Greene, Clark and myself contain many such cases.

One would think from the large number of cataract extractions performed (from 10 to 50 per diem) that most of the patients

which come to Smith's Clinic have cataracts, but not so; the minority are so affected. During a morning where 145 eye cases were admitted, 59 had cataract, 24 required iridectomy, mostly for corneal complications following trachoma, 27 required plastic lid operation for entropion and trichiasis from trachoma, 5 had other ocular conditions requiring operation, and 30 (estimated) were turned away hopeless, many from blindness secondary to trachoma. We saw very little trachoma in the first stages; nearly all the cases were in the third or last stages and presented the familiar squellae of unmistakable trachoma.

The next common complication is chronic non-inflammatory glaucoma (glaucoma simplex). Perhaps 10 per cent of all new patients coming to the door each day have glaucoma of some form. Only a few of these are operated on for cataract, but iridectomy for painful glaucoma is done repeatedly every day. Smith will examine a cataract complicated with glaucoma repeatedly and most carefully before he will decide to remove the cataract, but he will not refuse them the operation if the iris is still active, the tension fair and pain in the brow and temple absent.

Another rather common complication which we rarely see in our country is the couched or dislocated lens which has swung back in the pupil space. *Rawals* or professional lens couchers are still actively engaged in their nefarious business, although not so active as formerly. They go about couching lenses for a rupee apiece and sooner or later the patients all turn up at some clinic with blind eyes. An eye that has had the lens couched successfully is ideally beautiful. The pupil is black, round and central. There is little or no reaction following the couching and sight is instantly restored. The one great drawback which damns the operation eternally is that such eyes will not wear. They invariably go blind from optic atrophy, if not from glaucoma, and the duration of sight is rather short, rarely longer than two years. Smith said, "If the eye with the couched lens would stand the test of time and not deteriorate, I would give up all other methods of operating." But they go blind sooner or later. To see these cases in which the couched lens had swung back in the pupil come to the table for extraction was almost a daily experience. On some days five or six such cases would be operated on by Smith's method of extraction. When the lens swings back to its natural position, glau-

coma and optic atrophy do not usually set in. There were such cases.

Other complications commonly seen were: Cataracts with dense leucoma, with complete posterior synechia, with optic nerve atrophy, with retinitis pigmentosa, with progressive night blindness, a peculiar and very common disease of the retina very much like retinitis pigmentosa, but having no pigmentary deposits and characterized by rosy-hued disks, reduced bloodvessels and steady on-coming blindness (see Smith's reports concerning this disease which he calls "Ret. Pig. sine Pigmento"; also McNamara's textbook on "Diseases of the Eye"). Pterygium, blepharitis, conjunctivitis and dacryocystitis likewise occasionally complicate cataract, also diseases of the choroid, etc., and such other constitutional complications as one would naturally expect to meet with under the conditions prevailing in a tropical country among a squalid population.

So that strictly speaking, complications of some form are the rule rather than the exception.

There is rather common in India another form of cataract cases of which we see comparatively little in America, and while they are not to be classified as "complicated," they are extremely difficult to remove by any method. I mention this to give Smith the credit that is due him and his method, for by any other method these cases would prove to be anything but smooth. They are the hypermature, sclerosed or disciform cataracts, which are often reduced to less than one-third their original thickness, having tough capsules and tough suspensory ligaments. These cases are not very promising by any method of extraction, and are especially unpromising by the orthodox method (capsulotomy). They are quite common in India and constitute the "stump," which Smith will let the ardent beginner, who is "getting on" famously with his technique run against, just to check his ardor, render him more cautious and incidentally increase his "vitreous cases." We do not see much of this form of hypersclerosed or disciform tough old cataracts in our country, as persons will go to the surgeon before their lenses have time to resorb and harden to such an extent as is often seen in India. Smith will take them as uncomplicated cataracts and they furnish about fifty per cent of the vitreous cases in his statistics (my estimate). Our statistics by Smith's meth-



od ought to be better than Smith's as this type is not so common here.

(5) *What kind of cataracts prevail there?* I have just mentioned one of the most disagreeable forms to encounter; namely, the shrunken or disciform cataract. The commonest variety is the simple mature cataract, in which a cataract relatively the normal size of the lens is present and which has not caused blindness very long. Some of these are tumescent, which is an early stage of the same cataract. All have weak zonules and are very agreeable to encounter by Smith's method. Next there is the immature cataract, of which doubtless there exists in the world today ten times as many as of the mature, but patients carrying immature cataracts (including incipient) will not seek a surgeon until driven there by failing vision, and so they do not come to the operating room in such frequency as the mature cases. Next the hypermature cataracts, including the disciform or sclerosed cataracts, the morgagnian or "bag-like" (milky) cataracts and the pigmented or black cataracts. The shrunken form is very different to deal with by any method. The morgagnian and black cataracts are not troublesome as a rule (by Smith's method). Then we have the couched lens—also the capsular cataract and the juvenile and congenital cataract. The couched lens usually comes out without any real trouble; also the capsular form will give no special trouble if the incision is large enough, but the juvenile and congenital forms are invariably difficult, practically impossible of delivery by Smith's or the orthodox operation. They may be needled successfully or extracted by forceps. Smith prefers the later method.

The juvenile and congenital types are not included in the statistical reports of Smith or any of his pupils, as no attempt is made to deal with them by Smith's intracapsular technic. The following table represents the average number of each in a series of 100 cases, the nature, immature and hypermature being by actual count from my own note book and the rest estimated.

Table of 100 consecutive cataract cases:

Mature cataracts .....	48 cases
Immature cataract .....	23 cases
Hypermature cataract .....	18 cases
Couched (dislocated) cataract .....	3 cases

Capsular cataract .....	2 cases
Black cataract .....	2 cases
Juvenile or congenital .....	2 cases
Other forms of cataract .....	2 cases

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 100

(6) *Are they better behaved while being operated on than our own patients?* As long as they are not instructed what to do, I believe they are better than our own patients, but the moment you tell them to do something, like "look down" or "hold still," they are much worse. They are an ignorant and benighted people, who do not understand us as we understand each other, and they have the inherited superstitions of many centuries, together with the utter flight of ideas of obedience or harmonious response to command in times of crisis: consequently it is far better to go about operating quietly without a word of command. They usually seem in a trance state when being operated on and quite deaf, and to arouse them from that you must yell at them and punch them, and then they will resist and struggle in their effort to obey. I believe I never saw better patients and worse patients than I saw at Jullundur. This trait of good behavior so long as they are undisturbed, no doubt led Smith to adopt a method of operating which leaves the equation of the patient entirely out of consideration: and to frustrate any sudden or rebellious move they make at unexpected and critical moments, he has perfected and mastered the science of control of the lids and muscles that effectually shears the operator of all apprehension and renders him confident of success in all kinds of circumstances and master of the situation at all times. Not a word of command is given them from start to finish. They simply lie there and are operated on, regardless of which way they direct their eyes and whether they squeeze or not.

The great lesson I learned at Jullundur was how to eliminate the patient's equation without a word of command. I did 350 extractions successfully without any signs or language passing between me and the patients. I did not know a word of their language nor they of mine.

(7) *Do they behave better after operating than our own people?* I made many trips through the wards to observe how the

cataract patients were doing. Most of them would be lying quietly in their beds. Some would be sitting Hindu fashion on their beds, fanning themselves to keep off the flies, which are a pest throughout India. They were always patient and silent, obedient and docile, even stupid. They usually had some member of their family to minister to their simple wants, bringing them water or food or waiting near them to look after them when needed. Thus they had no nursing or care as we understand these terms. There are no trained nurses in the Jullundur hospital. The native dressers and assistants are busy in other ways and the patients are left to get along the best they can with the help of their friends. They usually behave quite well so long as their eyes are kept bandaged and they are not allowed to wander about. They must stay in bed for five or six days at least, either lying down or sitting up in bed: not so much because it is thought necessary to the progress of their case, perhaps, as because the staff knows that as soon as the patient finds that he can get about on his own account, he will decamp without further notice and take his bed chart with him. A certain number do wander off and are not missed because of the great number of cases in the hospital, and others coming and going continually; but they come back in a month or so with their clinical charts carefully folded and preserved, to get a pair of glasses. The first dressing often loosens or becomes dislodged or is disturbed by the patient in his natural curiosity to find out if he can see. I saw them peeping out to see me as I passed, a thing which always proves that the wound is doing well in spite of their meddling. They use no bed-pan or commode: no attention is paid to their bowels so long as they have their daily movement. Under each bed is an earthen basin shaped like an ordinary washing pan, which they use for accommodation at stool. Their food is of the humblest kind, a little cooked rice, fruit, candy or sweets, or the national dish—curry—and some coarse bread cakes, made of whole wheat crushed into a coarse flour and baked in pan-cake style. The members of their family camp on the veranda near by or in the open court, and provide food and drink.

The medicines given are opium pills for pain and restlessness, mercury pills (blue mass) for inflammatory reactions, and rarely anything else. Locally the eyes are left alone until the third,

fourth or fifth day, when the dressing, which has become soiled or misplaced as a rule, is removed and renewed by the "dresser." The dresser is not a doctor (usually), but a self-styled nurse, who goes from patient to patient with a kit of dressings and an attendant, looking after the welfare of the eyes.

Dr. Diwanali, Smith's first assistant, is a graduate M. D., and is in charge of the hospital and he is very expert and well trained as a surgeon and physician. He is a Mohammedan and lives on the hospital grounds in his bungalow, provided by the institution. He speaks the language of all the different castes and classes of patients and is ever attentive to their needs. He has many surgical cases which he has operated on himself and looks after them, as well as those operated on by Smith. Smith is a general surgeon and has many general surgical cases scattered through the hospital wards.

Thus you will see that they behave fairly well, considering the attention they receive, and probably if they were pampered and nursed continually, they would not do as well. Regarding the efficiency of this method, the results speak for themselves. Among about 1,200 cases of cataract done during my visit there, there were only two cases of panophthalmitis and I inquired particularly of the dresser if there were any cases of iritis and cyclitis in the hospital, he said there were only two or three requiring special attention. At that time there were about 350 cases in the hospital.

(8) *Are they less prone to post-operative complications?*

From the above description of their own behavior and the care they get, one would naturally think they did enjoy a certain immunity from inflammatory reaction. This opinion seems borne out by the statistics just quoted, viz: only two panophthalmitis cases following about 1,200 extractions, also the almost total absence of iritic and ciliary inflammation. In my own series of 350 extractions, there was one sloughing of the cornea and one double iridocyclitis found recorded on the "bed head tickets," on which the daily record of each case was made by the dresser. The rest all recovered promptly within ten days, sufficiently well to start on their homeward journey along the dusty road in the sunshine, many traveling on foot to their far-off homes. When they left, their eyes were still red, but they wore a green gauze "apron" or shade tied with a string around their heads, the gauze patch hang-

ing down over both eyes, but permitting the patient to look downward.

I left Jullundur on November 10th, going to Lahore, a hundred miles away, and I saw some of my patients still traveling on foot as far away as that. They still had their green shades over their eyes and were using their sight to find their way along, proving that no harm had come to at least those I saw. I conducted a careful examination of over 100 cases while being dressed four, five and six days after operation, making careful notes of all conditions present. Excessive redness was the rule, but the corneas were clear and bright and there was no sign of true iritis in a single case, the redness being purely conjunctival. I asked Smith why this redness was so universally present and he said it was doubtless due to the strong bichloride solution used as a douche in the cul-de-sacs just prior to the operation. He further remarked that experience with many thousand cases proved that no harm resulted and that iritis was extremely rare, that atropine was rarely ever required and that the cure was prompt and permanent. Examination of the bed tickets corroborated his statements concerning the non-use of atropine, and the cases which came in for their glasses after having been away from the hospital a month or two corroborated his statement regarding the total clearing up of the excessive redness. The statistics of other operators of India, who report regarding the results of the combined (capsulotomy) operation done on the same kind of cases, show about the same percentage of post-operative reactions as we have in America by the orthodox operation, proving that the native Indian *does show inflammatory reaction and delayed recovery* quite as often as our people. Why then do Smith's cases show little or no post-operative inflammatory reaction? It must be due to the *radical extraction* (capsule, cortex and nucleus), nothing of an irritating nature being left in the aqueous chamber, but I believe also that the clean, right-angle, corneal cut, free from ridges, grooves and thin knife-like edges, insures speedy union and frustrates any tendency of the wound to remain irritated long. It is well known that primary healing can only occur in a perfectly coapted wound, which in the cornea is a very important matter. By the incision Smith makes, there is perfect coaptation of the wound, epithelium to epithelium, elastic layer to elastic layer and corneal stroma to corneal stroma.

with no gutters or gaps to fill in by exuded lymph and slow transformation to scar tissue.

(9) *Do they require less care after operation than our own patients?* We are a luxury-loving people, accustomed to comfort and fretting if we are not well taken care of on such occasions. Fretting induces restlessness, and restlessness invites trouble after cataract operation. In that sense the native Indian certainly does require far less care than our own people. The results they get at Jullundur under the absolutely-necessary-care and no other, demonstrate that we are over-doing our cases after operation. Major Smith strongly insists that eyes should be left alone after operation for five days or longer unless there are signs of irritation, characterized by pain or distress. He also insists that the time to operate is when they first arrive, thus giving them no time to realize the anxiety and dread of an operation deferred for a day or two, living in the meantime in the midst of hospital surroundings, which are strange and which tend to increase their nervous anxiety and render them in an excited state for hours before the operation. Spare them this anxiety, which he likens to the dread a criminal experiences as he counts the hours until his execution. A tranquil pulse and a calm nervous system he counts of greater importance to success than an empty colon and a sterile face and beard.

(10) *Are they easily kept track of after leaving the hospital?* I ask this question because there has been a universal demand for reports on the after results at Jullundur. Sooner or later the large majority return and are inspected at the door by Major Smith and a pair of glasses given if everything looks good. An expert like Smith can tell if an eye is good by looking at it externally and making a few simple tests. He will inspect the result, take the tension in search of soft eyes and hard eyes, exclude night blindness and atrophy, and if everything passes a good simple examination, the patient is given a pair of +10.0 D lenses without further ado. Captain Lister reported as follows on the amount of astigmatism noted among many cases where vitreous had been lost at time of operation, from one to seven years prior to his examination (Knapp's Archives, Jan. 1910): "I found after doing a number of cases (by retinoscope) that the astigmatism was scarcely ever 1. D." This argues well for the corneal incision as made by Smith.

Smith will be satisfied with the vision resulting with  $+10.0$  D, if the patient says he sees well with them. If not, he makes a refraction test and an ophthalmoscopic examination. But as to "following up the cases" when they run into the thousands per annum; consider the thousands of other kinds of surgical cases that come to Smith's clinic, also his clerical duties as civil surgeon requiring him to sign many reports concerning plague, cholera, malaria, etc., his duties as jail physician and penal officer to the district jail, requiring the weekly inspection of all the inmates, and also the duties imposed by private practice, club life, social and political affairs, and you will excuse him for not giving to the world detailed reports concerning the absolute ultimate results in all cases. He does keep a good record of all cases until they leave the hospital and he knows that the eyes wear well, getting better in vision and stronger as time elapses, also that new ones are sent by the operated cases in increasing numbers year after year, which in India, as elsewhere, is a sure sign that the work is good and the results lasting. I saw many who had been operated on two, three, five or seven years ago and they had "good vision," and clear good eyes; I have never seen better.

(11) *Is Smith inimitable as a cataract operator?* Smith is a practical minded man with an excellent preliminary education and splendid surgical instinct—what you would call a "born surgeon." He operates on the eye with rare skill and masterful judgment. He is an expert at diagnosis, but he is not a surgical wizard, one of his favorite expressions is, "There is no witchery about the operation." Any well proportioned surgeon who has quiet nerves, good eye sight, good surgical instinct and courage, can, under the direct training and guidance of a competent teacher, soon learn to do the operation excellently well. No man will do well at it who insists on performing the various steps of the operation in the old way. The technic is different from that of the capsulotomy operation at every point and it is not easy to let go of all you have learned and take to new and radically different ideas. I saw young surgeons there who had never done a capsulotomy operation do Smith's operation with ease and dexterity. They knew no other method—there was nothing to unlearn. It is surprising how awkwardly everything goes to an experienced cataract operator who undertakes Smith's technic for the first few times. The first les-

son to learn is that the old methods are inappropriate for delivery in the capsule and therefore are to be cast aside. When a good surgeon approaches this operation in a good receptive mood, he will soon "catch on." Smith is truly a master; his vast experience has made him so; but others can be masters too.

(12) And finally, *Is the operation of extraction of cataract within the capsule as practiced by Major Smith better adapted to the Hindu and Mohammedan of India than to our patients?* This is the live question. I believe it is the operation of the future among the best surgeons of the world, regardless of where their fields of activity lie. The more exacting the public is, the better adapted to their demands is the operation taught by Smith. There is less manipulation required; one or two of the most troublesome steps of the old operation are entirely omitted. There is nothing left behind which will cause after-cataract, incite chronic iritis and cyclitis, or entail a tedious and distressing recovery. The pupil is clean and black. It is as suitable for extraction without iridec-tomy as the old operation and as easy to perform in this way. The healing is prompt and, best of all, there is no need to wait months and years until an immature cataract becomes mature, for the operation is singularly well adapted to unripe cases.

Smith, in his book which will be on sale within the next six months, states in the chapter on "Immature Cataract": "The mental depression (among immature cases who are told to wait for months until their cataracts become ripe) is allied to that incident to the prospects of confinement in a dark cell without labor—a form of judicial punishment admissible in no civilized country."

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## EXTRACTION OF CATARACT IN THE CAPSULE.

By R. JAMISON, M. B., B. CH. (R. I. V.)

BELFAST, IRELAND.

That extraction of the lens in its capsule is the ideal means of dealing with cataract has been admitted by all ophthalmic surgeons, and has been proved by the many attempts that have been made to solve the difficulties of the operation. These methods have all involved the introduction of instruments into the eye to pull or press on or free the lens, and the results of interfering in this manner with such a delicate and sensitive organ were so bad that all these methods failed ignominiously after very brief trials, and have been



succeeded now by the method of expressing the lens by pressure on the outside of the globe, so that the lens is not directly acted on by any instrument but is forced out of the corneal incision by the counter pressure of the contents of the globe.

During the winter of 1908-9 I had the privilege of being one of half a dozen or so who practiced this operation under the personal supervision and instruction of Major Smith, at Jullundur. The enormous confidence the Punjab people have in this operation is shown by the fact that my share during the winter was 680. The results of these 680 cases from the point of view of accidents and complications was as follows:

Vitreous escapes.....	35
Iritis .....	11
Capsule left behind.....	17
Suppuration.....	4
Expulsive hemorrhage.....	2

These figures are no better and in some cases worse than those obtained by other operators at Jullundur, as can be easily verified by reference to the transactions of the Bombay Medical Congress of 1909. The first thing to be noticed in this table is the number of vitreous escapes, it works out at 5.1 percent, which is very little higher than the percentage occurring in the capsule laceration operation. Of course it is far below what any one beginning the operation entirely by himself would have and is the result of skilled assistance and careful coaching in the best methods of dealing with the various conditions of cataracts. It proves, too, and the figures of others who have learned the operation Jullundur fully confirm the statement that with proper assistance and a knowledge of the behavior of lenses according to their physical qualities the number of accidents of this kind need not be appreciably higher than in the ordinary operation. In most cases the amount of vitreous lost was slight, not more than a drop or two. In nine of the cases, it was due to the patient forcibly squeezing up his eyes and shooting out the lens and some vitreous on the completion of the corneal incision, ten of them occurred in the attempt to remove with iris forceps capsules which had burst and the rest occurred in the ordinary performance of the operation. In five of these ten cases the capsules had to be left more or less completely behind and two of these developed severe iritis and one suppurated: in the

other five there was one case of iritis and one of suppuration. In the remaining twenty-five cases in which the lens was removed entire there was one case of iritis, one of suppuration and one of expulsive hemorrhage, the last I believe had nothing to do with escape of vitreous as the amount lost was small and moreover the hemorrhage came on about five hours after operation, whereas if due to loss of vitreous one would have expected it to come on at or very soon after the time of operations.

So that we may reduce the evil consequences that may have been the result of vitreous escape uncomplicated with trouble with the capsule or two, one iritis and one panophthalmitis, as apart from an inflammatory lesion there is nothing by which one could tell (when the patient is leaving hospital) an eye in which this had occurred from one in which the operation had been perfectly normal and successful. After all we must remember that such inflammatory lesions occur occasionally in the most perfectly performed operation and that a total of two inflammatory after effects is to be accounted for very easily by the filthy condition of the conjunctiva in many of the eyes operated on.

The next point for consideration is the number of cases of iritis. The immunity from iritis is one of the great characteristics of this operation and has been noted by every surgeon who has performed it. In the above series the total is eleven; four of them severe, three out of the four were found in the above mentioned cases of attempts to remove ruptured capsules, so that the total cases of iritis in uncomplicated operations is just a trifle over one per cent. This shows pretty conclusively that "simple" iritis must be due to capsular remains, if it were due to bruising, it should be more frequent in this operation as there is more bruising of the iris between the lips of the wound and the emerging complete lens, than when only the nucleus is being pressed out, while the theory of its origin from sepsis is disposed of by the fact that careful precautions are of avail against the occurrence of panophthalmitis, but not against "simple iritis" following cataract extraction with laceration of the capsule.

The capsule or part of it was left behind in seventeen cases. Rupture of the capsule is the most serious complication that can occur in the course of the operation. The rule with Major Smith is to attempt to remove it with iris forceps, which are passed

closed into the anterior chamber, as close as possible to the back of the cornea (the capsule often lies close up to the latter) when the points appear about the center of the pupil they are allowed to open as far as possible consistent with the size of the pupil and are driven straight back into the vitreous, closed: and pulled out. Usually they bring the capsule with them, either wholly or partially, if the former, well and good: if the latter, it is more efficient than any needling later on would be. If the opening is very small, the forceps may be introduced once again, but never more often, as vitreous is very likely to escape during these attempts and of course every fresh introduction of an instrument means a fresh chance for the admission of sepsis.

The seriousness of this complication lies in the fact that if capsule is left, it is liable to be followed by iritis, with the evil effects associated therewith, while if an attempt is made to remove it, it may only partially succeed and the same complication is likely to ensue and in addition the risk of sepsis.

The number of cases of suppuration was extraordinarily small when we consider that at least 15 percent of the eyes amongst the Punjab peasantry are in such a filthy state from chronic conjunctivitis (often trachomatous) that no surgeon outside India would touch them without weeks or months of preliminary treatment. In India this is impossible since the patient will not submit to it and unless he has the required operation performed immediately, he goes off to some other surgeon or more probably to the "rawal" or lens coucher who has no such scruples. This immunity from sepsis is due to two causes, first to the use of a stream of 1 in 2,000  $\text{Hg Cl}_2$  from a vessel suspended about four feet above the patient's head. This thoroughly washes out the sac and the lotion that remains forms a weak antiseptic solution with the tears which inhibits the growth of any germs that are left. This strong solution of mercuric chloride no doubt causes much conjunctival reaction, but I have never seen it do any damage to the cornea. The second cause lies in the small number of instruments introduced into the eye.

#### Results as Regards Vision.

Reports of the visual acuity are, naturally, not so complete as those obtained in more civilized countries. To begin with, the cases have to be tested (usually) at the end of seven days after

operation, at a time when the eye is not well able to stand light and before the corneal wound has undergone full cicatrization and with the astigmatism reduced to its minimum. The rule is to examine the patient with a + 10D lens, before a test card with groups of dots of such sizes as have been experimentally proved to correspond to the ordinary letter tests. Very often it is found that the patient when leaving hospital can count the groups of dots in the line corresponding to 6-6 and in 96 percent of cases he can read the line corresponding to 6-9. This is by no means his greatest visual acuity, for as the eye quiets down and gets accustomed to light, and the corneal wound finally heals, the vision goes on improving until finally it is an unusual thing to come across a patient with less than 6-6. I have seen many patients, who for various reasons have come back after periods extending up to ten years; practically all have had 6-6, many 6-5 some even 6-4.

So that briefly comparing the merits of this operation and of the ordinary operation with laceration of the capsule, we have in its favor almost complete immunity from iritis, (2) the absence of an after cataract becoming denser as time goes on, (3) the ability to deal with cataract at any stage, thus eliminating the long period of anxiety, worry and possibly financial loss which ensues before the cataract ripens, (4) the absence of tags of capsule in the wound which delay healing and lead to the formation of filtrating cicatrices, convenient channels for the passage of microbes into the eye; (5) the small amount of after-treatment necessary, as there is neither so much iritis nor the presence of an after cataract, and, finally, (6) the better visual results. Against these advantages we have the more frequent escape of vitreous (especially in unskilled hands) but in this connection we must remember that if the operation is properly done, the number of escapes is but slightly more than they are in the old operation, while the consequences of such an accident are vastly different in the two cases. In the one, it is complicated with the whole of the capsule and probably much of the lens matter remaining behind to cause iritis and irido-cyclitis, in the other there is no such complication and when the patient leaves hospital, there is nothing by which one could tell an eye in which such an accident took place from one in which the operation was quite uncomplicated and successful, while the investigations of Captain Lister, I. M. S., as published at the

Bombay Medical Congress last year, show that uncomplicated escape of vitreous is not followed by any evil consequences.

With so many advantages in its favor, and with the figures of operators who have learned this operation under Major Smith to prove that they can do it almost as well as he can, it ought to be practiced much more widely than it is. Its restricted employment depends on several factors of which I believe the following are the most important. In the first place the operation is not an easy one, but the difficulty lies not so much in the operation itself, as in the acquiring of proficiency in the various devices which have to be adopted to suit different conditions. Here comes in the immense advantage of learning the operation under the instruction of one who is thoroughly acquainted with all its details, who knows from long experience how certain classes of lenses are likely to behave and how accordingly they must be treated, who can give directions as to the amount and direction of pressure and how and why they must be altered and who knows why certain complications are likely to ensue and how they can be avoided. Even then, it cannot be learned by simply watching such a man doing it or by listening to his teaching, it must be practiced under his supervision and thus learned quickly and thoroughly. Otherwise proficiency will be gained as the result of bitter experience and probably an evil reputation as a cataract operator, after a very large percentage of escape of vitreous, many burst capsules, many failures to accomplish the operation without the use of unjustifiable force, and much reaction in the eye as the result of too much interference with it. The consequence is that the beginner, working by himself, concludes that the operation is not practicable and gives it up in disgust or despair, or he selects those cases that his limited experience has taught him are most likely to do best and thus deprives many a patient of the benefits of the operation which is feasible in all cases if the operator only knew how to do it.

The next factor is the assistant, in no other operation in surgery does he play such an important part. It is no exaggeration to say that an untrained or unskillful assistant will spoil almost as many eyes as an unskilled operator. His duties are the same as in the old operation until after the iridectomy has been done, the speculum is then taken out and the assistant has to take all pressure off the globe and at the same time be very careful to

keep his hands and arms out of the surgeon's way. He stands at the surgeon's left side and pulls down the lower lid by means of his left thumb on the patient's cheek just below the lid; a little pad of wool beneath his thumb enables him to maintain a firm hold if the cheek is moist. At the same time he lifts the upper lid straight forward, or forward and slightly downward, never upwards, as the peripheral fibres of the orbicularis would then get a chance of exerting pressure on the globe. He does this by means of an instrument like a stout strabismus hook, held between the thumb and first two fingers of the right hand as a pen in writing. He holds it at such a length that the tips of the ring and little fingers fully extended, can push the peripheral fibres of the orbicularis upwards on the forehead and keep them there by pressing firmly on the upper margin of the orbit. This, in addition to preventing the orbicularis from getting at the globe, gives a good view of the upper fornix and thus exposes the field of operation. The patient is allowed to keep his eye in whatever position he likes, in the great majority of cases he rolls it strongly upwards. In this way there is no trouble with patients who are unable to look in any required direction nor with those who cannot maintain the eye in such a direction, there is also no risk from sudden movements as the eye is invariably maintained in the position first chosen. The assistant must remember to keep his right wrist strongly flexed, so as to allow the surgeon to get his left arm between the patient's head and the assistant's arm.

The foregoing may seem a lot of stress to lay on the duty of one who in most operations has a subordinate part to play, but anyone who has experienced the poorer exposure of the field of vision, the greater liability to accidents and the hampering of his left hand by an unpracticed or clumsy assistant, will soon have any lingering skepticism about the importance of his assistant banished.

The next provision that makes for success is the knowledge of the behavior of lenses according to the stage of maturity. *The easiest lens to deal with is the immature one*, it nearly always comes out with the greatest ease. Pressure is applied over the lower third of the cornea, close to its left margin, with a spatula held vertically in the left hand and over the right border of the lower third, with the point of a blunt hook. The direction of

pressure is straight backwards towards the optic nerve. The spatula does not move, but the point of the hook may be drawn lightly two or three times across the lower third of the cornea until the lens appears in the wound and is about half delivered, then the pressure of the hook is slackened and its direction changed from backwards to backwards and upwards, and finally to upwards only as the lens topples over on to the cornea, the corneal flap being folded beneath it. In this way the lips of the wound are kept close to the lens and there is little room for vitreous to escape, even if there were enough pressure to force it out. The spatula all this time, has been maintaining just enough pressure to keep the lens from slipping back into the eye and as soon as it topples onto the cornea the spatula is taken off and the lens removed by pressing the hollow of the hook well under it and lifting it away—not pushing or pulling it away with the point of the hook for fear of rupturing the capsula, which may still have a slight attachment to the zonule. The lens is removed in the same way when, as occasionally happens, it remains between the lips of the wound and does not topple over, but in this case, enough pressure is kept up with the spatula to prevent it retreating into the eye, until it has been removed. These maneuvers, though difficult to describe intelligibly on paper, are always easy in practice and very rarely indeed does an immature lens give rise to trouble.

Next come the intumescent, the ripe swollen and the morgagnian cataract which has not undergone much shrinkage. The condition common to these are the swelling of the lens and the stretched and weakened capsula, which is extremely liable to rupture when the lens is about half out. If such lenses be expressed by the above method, they are dislocated at first close to the corneal wound and when the capsula yields, it is pulled back into the eye by the intact lower part of the zonule and has either to be extracted with forceps or left behind: either line of treatment is liable to be followed by undesirable consequences, as has been shown above.

By the following means the difficulty can be overcome. Apply the spatula and hook as before and first proceed to define the ciliary ridge, which can be felt as a hard resisting body when we try to move the hook from the cornea on to the sclerotic, then, keeping up just enough pressure to prevent the point of the hook from slipping over this ridge, pull as if trying to make the patient

look down. The effect of this maneuver is to make the zonule rupture below and the lens roll upwards so that the lower border appears first in the wound. When this stage is reached, the pressure of the hook is gradually changed from downwards through backwards to upwards, the point of the hook following the emerging lens and folding the cornea under it as before. Rupture is still likely to occur, owing to the great delicacy of the capsule, but not so much as when the upper border comes first, as the attached portion of the zonule, being now above the emerging lens, acts more directly on it and less force is required. Even so, many of them rupture when the lens is half or more out, but as the capsule is now attached above, it is not pulled back into the eye, but remains in the corneal wound and can be easily removed entirely with a pair of dissecting forceps. This method is specially applicable to swollen lenses, because the large amount of fluid matter they contain makes them mould easily and adapt themselves to the limited space in which they have to maneuver. It is much more difficult to acquire proficiency in this than in the preceding method and the beginner is very likely to fail in making many swollen lenses turn this somersault, but once he has mastered the art, he will seldom fail to deliver the lens and its capsule without introducing instruments into the eye.

Last of all is the hypermature, shrunken lens. From its small size and its thick capsule, it is the most difficult of all lenses to dislocate by this method. If an attempt be made to extract it by pressure directly backwards, not the shrunken lens, but the zonule above it is likely to appear in the wound; if the pressure be kept up this will rupture and further pressure will only cause escape of vitreous, hence we attempt to make it behave in the same way as swollen lenses. Very often this fails and, as the result of the pressure, the lens dislocates at the upper part and behaves as already described. As soon as we see this happening, we cease our attempts to make it turn upwards and maintain just enough pressure to keep a small bead of vitreous presenting at the corneal wound, into this the end of a spatula is inserted and pushed down behind the lens which is forced up the spatula, as on an inclined plane, by pressure of the hook on the cornea. The spatula is used merely to support the lens and prevent the pressure of the hook from being transmitted to the vitreous. Of course, if we succeed



in making the lens turn upwards, there is no necessity for the introduction of the spatula and this is the reason for adopting the method applicable to swollen lenses.

There is only one other variety of lens to which particular attention has to be drawn, and this is what Major Smith calls the "soapy" lens. It differs on the one hand from the bluish-white, mother-of-pearl appearance of the intumescent lens and on the other, from the opaque, milky-white appearance of the mature or hypermature, swollen lens. It is very well described by saying that it has the appearance of ordinary white soap. The special peculiarity about it is that it is very firmly attached and is almost impossible to dislocate.

So much for the lens, but a few points require to be borne in mind about the eye itself. The first is that escape of vitreous is much more likely to happen in prominent eyes than in deep set ones, even when all pressure has been taken off the globe. The next is that the same accident is more likely to occur when the patient looks down, than when he looks up. This in all probability is due to the eye being in a strained position (the eye when at rest turns upwards) and so the intra-ocular tension is somewhat increased, but perhaps the manipulations are not so skilfully performed in this unusual position; we know that this is not the serious complication it used to be considered, but still it is an accident we try to avoid and even though the amount lost may be quite small and we know the consequences will be nil, it is yet considered a blot on the operation.

Such are the main considerations to be taken into account in the performance of this operation, and there is no reason why with enough practice and good assistance, it should not be successfully performed by any one.

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## CATARACT AND JULLUNDUR SMITH

An account of the circumstances surrounding the modern operation of extraction in the capsule with an appreciation of their influences on the present position of the operation.

BY CAPTAIN W. E. M'KECHNIE I. M. S. CIVIL SURGEON.

Etawah, India, formerly, for three years, at Jullundur.

It was a surprise to me when I read in 1903 of Major Smith's appearance before the British Medical Association at Swansea, and

his production of a large bottle containing about a thousand cataracts, smooth and glistening in their capsules, which he stated he had extracted by operation from the eyes of natives of India. At that time the capsulotomy operation held an undisputed position in the ophthalmic world. The operation of extraction in the capsule had been tried by many surgeons and abandoned. It had been found either impossible to do, or, if done, it had been so frequently attended by serious damage to the eye that operators had joined together in a chorus of condemnation or had remained discreetly silent as to their unfavorable experience. Although recognized as an ideal operation if it could be done safely, ophthalmologists had come to regard this ideal as unattainable. And it was a pity: because no one could regard the capsulotomy operation as a complete operation: its requirement of a ripened lens, and its liabilities to after-cataract, iritis, and lens-capsule in the wound were serious defects. That surgeons should have resigned themselves to regard this incomplete operation with its much restricted applicability as their operation of choice was a measure of the hopeless failure which had hitherto attended extraction in the capsule.

So it must have been a surprise to many when Smith appeared with his bottle. Here was a man producing a bottle full of a thousand cataractous lenses, each smooth and even of contour and evidently a complete lens. He stated that he was in the habit of removing lenses like that as a routine, and that his cases did remarkably well.

Smith went back to India: Europe and America had nothing to say. Smith continued to operate at Jullundur on increasing numbers of cases till the totals became so large that notice had to be taken of them. Astonishment might best describe the mental state which his figures produce. The whole question of the operation was opened up in the pages of the *Indian Medical Gazette*, and a discussion arose with Smith (2,3,4,5) on one side and some of the leading ophthalmic surgeons of India on the other.

India is a huge country and the medical men in it are far apart and seldom see each other's work. There are centers of medical education with professors at Lahore, the capital of Punjab, in the north, Bombay in the west, Calcutta in the east, and Madras in the south. Apart from these large centers there is usually only one medical man in each district, which occupies an area of about

1,500 square miles and has a population of about 1,000,000 inhabitants, who are almost wholly tillers of the soil. Communication from one part of a district to another is slow and imperfect, there being very few metalled roads. Consequently except in the capital towns above mentioned which concentrate a large population within a limited area, the mass of the people have difficulty in reaching the medical aid provided by the civil surgeon at the district head quarters.

It is at such a district headquarters, Jullundur, that Smith does his work. Jullundur itself is merely a military cantonment and a magnification of the collection of hovels which forms the ordinary Punjab village. A single line of railway runs through it connecting the junctions of Delhi and Ambala in the South with Lahore, the capital of the province, in the north. The Grand Trunk Road accompanies the railway, and with this exception practically all the roads in the district are unmetalled tracks. Agriculture is the only industry. The climate is hot and dry, and from May to July a pitiless sun sheds its fierce heat and light upon the parched and quivering earth: the rains for the next two months give some respite and in October it begins to get cooler. But throughout the year the glaring light of the sun during the day is very trying to the eyes, and it may be that the intensity of this light is the cause of the great prevalence of cataract. Cataract has been produced in rabbits' eyes by exposing them to the highly actinic rays of a mercury vapor lamp and certain kinds of bottle makers get it from looking at an intense light. The conditions which obtain at Jullundur prevail more or less all over India. The light everywhere intense, and, to a white man, dazzling. The farther south one goes the longer is the rainy season and the longer the hot weather; the farther north one goes the shorter the rainy season and the hot weather; but while the latter lasts it is fiercer. Whatever the conditions may be which produce cataract they prevail all over India, for it is common everywhere. There is certainly not a special epidemic prevalence in the Jullundur district. The cataracts one sees there do not differ from those one sees elsewhere in India and in Europe. The only feature in which the eyes differ materially from European eyes is that the conjunctival sac has in many cases been the seat of chronic trachoma. This disease is extremely prevalent and accounts for by far the

greatest number of cases of blindness and defective vision. The disease has usually run its course before the age when cataract commences; and when one has to operate upon the eye for cataract, one is not concerned with an active trachoma but with the difficulty of operating on an eye with a very much contracted conjunctival sac, or on one which has an area of corneal leucoma. On the whole, one operates for cataract in India on a greater percentage of unfavorable eyes than one does in England.

Smith's hospital at Jullundur is built after the fashion of the Indian serai, or travelers resting place. By the looks of it, it was probably a serai before it became a hospital. Passing through an arch-way one enters a quadrangle which is surrounded by a lot of little dens. These dens accommodate the patients with their friends and relations who come to look after them, as there are no nurses. A man from the bazaar comes round selling food and there is a water-carrier to draw water from the well at the gate. A spectator if he waited long enough would eventually see a native of the better class wending his way about amongst the patients, examining them, making notes and issuing orders to an attendant. He is the assistant surgeon, a man trained at the Lahore medical college. His attendant is called a compounder. He dresses the patients who require it. There are three compounders. Their knowledge is wholly practical and has been acquired at the hospital. Their pay is from 8 to 20 rupees a month or about 50 American gold dollars a year. One of them assists Smith at his operations; another of them puts cocaine in the eyes before operation, wipes them with a little perchloride, and selects any cases which he thinks are unsuitable for operation on account of conjunctival inflammation. Everyone defers to his judgment in this matter, including Smith, because this man has been dressing cases after eye operations for the last 25 years. A hospital assistant to give medicine, and the man who sweeps up, complete the establishment over which Smith presides.

Such an establishment and such a place are typical of the Indian district dispensaries. They exist on a grant of money which would only suffice to maintain two or three beds of a modern hospital in Europe or America. They accommodate normally from twenty to thirty in-patients. A contrast to this is afforded by the hospitals of the large towns already mentioned. Here we find

large buildings of brick and stone several stories high, their floors are paved, they have ample beds and bedding, and a staff of nurses, assistant surgeons, hospital assistants, and students. A population numbering from a half to one million lives at their doors; they can accommodate hundreds of in-patients.

These are the facts and conditions. It remains to explain why Smith at Jullundur district dispensary has operated on over 20,000 cataracts during the last ten years by the intra-capsular method. If one were to divide this number by a hundred, one would still get twice as many as Pagenstecher did in the same period. I have stated that there is no special epidemic of cataract in Jullundur district. The surrounding districts are just the same. Lahore itself is not far off. A surgeon extensively known in the Punjab as an eye-operator has been professor of surgery there for the last 25 years. He is as skilled as any man in the ordinary cataract operation. Yet with all its advantages of a large population at its doors, ample accommodation, and a medical school, Lahore hospital has never shown anything like the numbers which Smith can show. The same statement applies to the other large hospitals in the big Indian capitals, although some of them are specially equipped for eye work.

Smith's cases began to increase in number from the time of his taking to his present operation. His adoption and perfecting of extraction in the capsule is the only factor which can account for the popularity of his clinic amongst the people. Slow, conservative, and ignorant as they are, there must be a striking superiority in Smith's results to induce them to flock to his hospital as they do. The people as a rule dread and dislike going to hospitals. A single case discharged blind will stop all cases coming from his neighboring villages for six months.

The facts already noted show that other surgeons in India have enjoyed equal and greater opportunities to operate for cataract. These surgeons in view of their extensive practice must be as skillful as any in the world at the capsulotomy operation. I have seen it stated that in the hands of experts the capsulotomy operation and the intracapsular give equally good results. This body of 20,000 cases denies this. It affirms that the intracapsular operation gives better results, much better results, results so much better that the difference has become obvious to untutored peasants.

They know nothing of what is being done to them. They have no prejudice in favor of any particular operation. But they spread the news that they get exceptionally good vision from Smith, till now the news has spread as far as Cabul in Afghanistan, Karachi in the West, and Bombay in the South. I have seen patients from each of these places come to Smith for operation, and this is a significant fact when one remembers the illiteracy of the people, their poverty, and the poor facilities for transport. It is unfortunate that the conditions of district hospital practice preclude the systematic examination of the cases and the measurement of their vision some months after the operation. Had it been possible to do so the superior merits of the intracapsular operation as performed by Smith would have been demonstrated beyond cavil long ago. Captain Lister indeed when at Jullundur succeeded by means of the most indefatigable labor in collecting and examining nearly 100 of Smith's old cases in which at the operation escape of vitreous had occurred. This is a very large number, as Smith has escape in less than 5 per cent of his cases. The results of this investigation show that the cases were possessed of exceptionally good vision. It is reasonable to suppose that the other cases which did not have escape are equally good if not better.

To Smith then is due the credit for having demonstrated to the world that there is a better way of extracting cataract than by the capsulotomy operation. His writings have not enabled other operators to follow his methods with sufficient accuracy to be able to attain his results. This is partly the fault of unillustrated description and partly from the nature of the subject, as it is impossible to acquire by reading those minutiae of technique which are necessary in order to successfully perform Smith's operation. Smith has recognized this and has now taught several surgeons how to operate by actually making them operate under his direct guidance. Of these surgeons, I am very fortunate to be one, and I must here express my gratitude to Smith for his kindness in letting me do over 500 cataracts in his hospital. Before I ever knew Smith, I had read one of his papers and I had practiced the operation of extraction in the capsule on the strength of that reading. My experience was that I could do some cases fairly well, but in others I had to resort to the intracapsular operation. In 1906 I went to Jullundur, and I there saw Smith for the first time. I often saw him operate, and having seen, I now thought I knew

how it was done, and I went back to my own hospital and tried to imitate him. I was astonished and mortified to find that I was no better able to do the operation than I had been before. This has also been the experience of well-known eye surgeons. The eye sees without seeing, the hand is untrained. The operation looks so easy when Smith does it that one wonders why any other operation was ever tried. When at last Smith allowed me to operate under his directions, I found out that this ease and facility depends upon the execution of an absolutely correct technique, and that whilst the things one ought to do and must do are few and simple, there is a multitude of things one ought not to do but which one is very apt to do. These vary with the operator and with the eye, and it is very instructive to watch beginners at work, one learns far more from this than from watching Smith; and it becomes obvious why other surgeons think poorly of the operation who have only their experience of the old operation to help them.

The operation then consists of a series of manipulations on the part of the operator and his assistant which if carried out with precision lead to the rapid and safe delivery of the entire lens. The operation can be done in half a minute from the commencement of the incision. But any bungling or want of accuracy may at once involve the operator in complications which convert the operation from an easy one into one of great difficulty, or which even make it impossible. But provided the operator knows exactly what to do and does it, the operation is easy and simpler than the ordinary operation and can be performed time after time in case after case with a uniformity and regularity which has been likened by more than one spectator of Smith at work to "shelling peas."

When operating under Smith's able direction it did not take me long to appreciate the minutiae of technique to which I had been blind when merely a spectator of the operation, and I soon acquired the requisite dexterity and was able to operate with confidence and success, such a success as I am sure I could never have attained by the old operation. In more than 500 cases only two eyes were lost from panophthalmitis, and in only one case did I fail to extract the lens, although no doubt I should have failed at first in other cases had I not been helped by Smith. But after I had gained some experience I did the cases without any help. The cases in which the capsule burst and had to be left behind were not much over a dozen. I now do extraction in the capsule in all

cases with the exception of juveniles. I have no fear of escape of vitreous. I have never had a serious escape and seldom more than a few drops. My total escapes are under 6 per cent. My only real trouble is prolapse of iris. I get a prolapse of one corner of the coloboma rather frequently. But it is usually quite small and does not seem to do much harm. It draws up the pupil slightly at one side and delays healing. I do not get iritis. I have no qualms as to capsule in the wound and I know that there will be no deterioration of vision from after-cataract. I have the satisfaction of sending my patients out from hospital 8 or 9 days after the operation with brilliantly black pupils and the certainty that the vision will progressively improve.

My conclusion is that cataract should be extracted in the capsule by every operator competent to do it. That to become competent a man should be practically taught; that operators of experience who have condemned the operation have done so owing to a want of practical knowledge of the correct technique, and that this knowledge and not peculiarly favorable circumstances at Julundur is the reason for the superior result obtained by Smith and his pupils.

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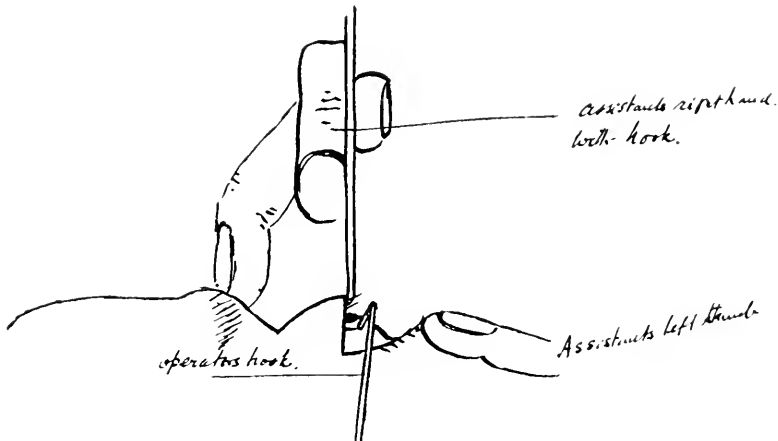
## EXTRACTION OF THE LENS IN ITS CAPSULE — SMITH'S OPERATION.

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In 1906 I performed 311 cases of extraction of the lens in its capsule and reported my experience of these cases in the *Indian Medical Gazette* of June 1906. I had not seen Major Smith do the operation but I had read his description carefully and his splendid results led me to try the operation. In these 311 cases there was an escape of vitreous in 3.5 per cent and I came then in 1906 to the conclusion that it was an ideal operation, but that the



average operator would get an escape of vitreous in 30 per cent. In 1907 I was away in England. On my return in 1908, I resumed the ordinary cataract operation with capsulotomy till I should have an opportunity of seeing Major Smith do the operation. This opportunity occurred in October, 1909. I went to Jullundur where Major Smith welcomed me. Dr. Clark of Columbus, Dr. Vail of Cincinnati, and Dr. Greene of Dayton were also there learning the operation and inquiring into its merits. On the first morning I saw Major Smith remove 14 lenses in their capsules without any escape of vitreous or any mishap. I found to my surprise that the 311 cases of removal of the lens in its capsule which I had performed in 1906, were not done by Major Smith's method at all, although I had tried to follow his technique from the description



in his paper. The method I had used was not in the least like Major Smith's. The operations I had done, were performed by looking into the eye over the eyebrows from behind the patient's head, and making pressure with the bend of the strabismus hook on the lower edge of the lens and making counter pressure on the upper edge of the incision with a spoon held ready to receive the lens. This is not Major Smith's operation. In his operation, after making the incision and removing the speculum the lid is held vertically forwards by the strabismus hook. This the operator has to bend over the head and right shoulder of the patient in order to see the globe and he looks during the enucleation at the lower edge of the cornea from over the cheek. Also the lens is dislodged with

the point of the hook and not the bend of the hook and often by the hook alone. It is quite a different technique to what I attempted. The successful performance of Smith's operation depends entirely on a correct knowledge and understanding of the technical details. It is necessary to see it done and to be taught how to do it. Like all delicate scientific manipulations such as the working of a high power microscope or setting of a chronometer, it has to be taught by some one competent to teach it. It is necessary to learn the operation either from Major Smith himself or from one of his disciples.

During the next few days I saw some more cases done by Major Smith, Dr. Clark and Dr. Greene. Major Smith also kindly permitted me to do some cases under his supervision and guidance. After seeing him and others do the operation as it should be done and after doing 35 more cases on my return this month to Agra, I am convinced that it is the correct procedure and the operation above all others.

The result of these 35 cases was four escapes of vitreous, one rupture of the capsule; all but one have resulted in good eyes and that failure was due to retinal changes. Four had the iris caught in the angles of the wound, but this is a difficulty which will be attended to in future operations.

I have had a large experience of the capsulotomy operations, having done 849 cases in 1904 and 1905, and 136 cases in 1907 and 1908 with a percentage of 90 good eyes, so that I am not altering my procedure lightly or without thought. With a competent knowledge of the special technique and the method of manipulating the point of the hook the lens should be delivered in its capsule with a 10 per cent escape of vitreous by the average operator and with probably a much smaller percentage in the really first class eye operator. The facility and certainty with which I have seen it done and have (after being taught) been able to do it myself have convinced me that it should be the operation for nearly all cataracts and that every teacher of eye surgery should learn it and teach it to his pupils.

It has been asserted in India that Major Smith has a special knack or trick in the operative technique which the average operator cannot acquire. This is not the case, the operation needs delicacy of hand and steadiness of touch, but it can be readily taught and learned by the average operator. Any surgeon who lays claim to be a specialist on eyes who has done 100 or more of the

ordinary capsulotomy operations should have acquired the necessary steadiness of hand and lightness of touch to do the operation. Because it is a delicate operation and needs competent instruction to do it, is no argument that it should only be done by one or two operators. It is more an argument that every really good specialist should be able to do it.

In my opinion Major Smith has discovered a new technique, the steps of which combine together to form a new operation. Other operators before him have delivered the lens in its capsule but Major Smith has discovered and introduced a new method of manipulation which will stand the test of time and is likely to displace the old operation in the hands of the best eye specialists. I know that 35 cases of my own are a small number to go upon, and I would not rush into print on these alone, but I have a very large experience of the old operation and I have seen for myself the facility with which the Smith operation can be done by Major Smith and others and the splendid results which the operation gives (99 per cent good eyes in Major Smith's hands) that I am convinced it is the operation of election for senile cataracts and by that I mean the operation which will give the majority of our patients the best and most useful eyes.

One or two of the most essential points in Smith's technique seem to me to be:

(1) That the operator should be sitting down at a table 2 feet 1 inches high and a stool 2 feet high. This gives great steadiness to the hand and body in leaning forward.

(2) The incision should be a large one.

(3) After the incision and the iridectomy the speculum is removed and the lid is held vertically forwards, the operator then has to bend forward over the right shoulder of the patient and look into the eye over the cheek and concentrate his attention on the lower edge of the lens and the influence the hook has on the lens.

(4) The lens is first dislodged by the point of the hook, not the bend. In some cases the hook is pressed straight downwards and moved from side to side and the lower corneal flap is drawn over the emerging lens like a foreskin over a prepuce. In some cases the hook is slightly pressed downwards and then drawn towards the feet, the lower corneal flap is thus gently slid under the lower edge of the lens and the corneal flap is used to dislodge it: the lens then tumbles out lower end first. Major Smith calls these lens "tumblers."

## THE SMITH OPERATION—TOILETTE AND AFTER-TREATMENT.

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Having been asked to contribute a short paper on some phase of this operation, I have selected the above subjects because I believe they have heretofore received less attention than their importance deserves. In the beginning it should be stated that I shall confine what I have to say concerning the toilette, to the means employed after the delivery of the lens (in normal cases) to secure smaller and better located pupils, free from prolapse, incarceration or entanglements of iris.

As to my right to be heard on these subjects, I may state that it was my privilege to spend about ten weeks in India last fall, over six weeks of this time being spent in Smith's Clinic at Julundur City. During the season, about 1,200 expressions in the capsule were made by Smith himself, Dr. Dirwan Ali, his native assistant, Dr. Clark of Columbus, Dr. Vail of Cincinnati and myself. Many of these operations, other than my own, I witnessed and followed through the after-treatment. Having had a considerable experience in attempting to do this operation before going to India and having given my experience at some length in several papers, as to the value of a small iridectomy and careful and painstaking toilette on the size, shape and position of the resulting pupil in about 110 cases, Major Smith was anxious to have me supplement this experience by a study of the value of these measures *on a large scale* because he recognized that such a study would throw some light on one of the phases of the operation which had not been as carefully worked out as some others and would show what could be accomplished by careful attention to these details. For this purpose the service of a native compounder, who could speak and understand a little English, was placed at my disposal and every facility was given me for carrying on the work and some suggestions which I made and whose importance I emphasized, relative to making the iridectomy as small as possible by snipping the iris from below at a right angle to the section and not cutting it parallel with it; also relative to the importance of freeing the angles and replacing and smoothing out the iris *as thoroughly as possible*, were put in practice. An iris repositor which I took with me (I regret that I

do not know who designed it \*) pleased Major Smith, and we put it in daily use. The influence of these measures in determining the size, shape and position of the pupil as shown by a pencil drawing which I made of about two hundred and fifty cases at the first dressing, usually on the fifth day, was so noticeable that we soon became convinced that one of the serious objections urged against the operation could be largely overcome by careful attention to the details just given and that wide, updrawn pupils and angular entanglements were not necessary results of delivery in the capsule, but more often resulted from insufficient attention to freeing, replacing, and smoothing out of the iris. It is not my intention to even intimate that attention had not been given to these points before. On the contrary, the improved appearance of eyes operated last year over those operated the year before, and the year before that, and so on, was living evidence of the evolution through which the operation was passing, and while it must be admitted that in the present stage of development of the operation the tendency is yet in the direction of too high and too wide pupils. This tendency, I think, can be largely overcome by attention to the details already given. To carry these details into actual practice has been rendered easy since Smith has demonstrated how perfectly the lids can be controlled with his large hook under the upper lid and the thumb of a trained assistant pulling down the lower, and then all tension can be taken off of the eyeball by allowing the patient to look high up (they will usually do this if left to themselves, that is, if not told too look down); this is the direction the eyes naturally take in repose, in sleep. When the eyes are in this position the lips of the section will usually fall apart, the hyaloid fossa can be easily mapped out, the vitreous body will tend to recede backward, away from the section, and any reasonable amount of manipulation in making the toilette can be done with little fear of rupturing the hyaloid and losing vitreous.

For the purpose of showing how little muscular compression of the eyeballs can take place when the lids are held as described, and eyes in this position, I can state that I have several times seen vitreous which had escaped from the eye, sucked back into it so to speak, I think, because of the vacuum created by the absence of the lens and freedom from compression of the globe.

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\* I have learned that Dr. Homan Knapp designed the iris repositior referred to.

This position of the eye may seem an awkward one at first thought in which to make the toilette, but really it is not. The operator should stand well beside or a little in front of the patient; the assistant should elevate and draw outward the upper lid in line with the axis of the orbit. As already stated, the incision will gape, the anterior lip will tend to fall downward into the hyaloid fossa and the iris will usually be seen in close coaptation to the under surface of the posterior lip of the section. If the iris is left in this false position it seems reasonable to suppose that traumatic inflammatory adhesion will form and a high pupil result. This, I think, will also explain the late occurrence of this condition in cases where no prolapse incarceration or entanglement of iris can be found to account for it. The remedy lies in careful attention to details, the iris should be carefully smoothed out of the angles of the section and released from its false position just described by gently passing the flat end of the iris repositor, which has been bent to an obtuse angle, between it and the under surface of the posterior lip of the section. By elevating the hand the same end will free the angles; or better still, the instrument can be reversed, and the probe pointed end, which has been bent to an acute angle with the shank 4 mm. from its tip will be found better for the purpose. A small quantity of Ung. Hydrarg. Oxid Flay. is applied to the edges of the closed lids, and both eyes are bandaged. Such, in brief, is the toilette I have used and seen used in perhaps seven hundred expressions and I wish to record my observation that these eyes will compare favorably in cosmetic appearances with any equal number of eyes operated upon by the combined method that I have seen. This remark should be again qualified by the statement that I do not include those cases which have had loss of vitreous. In such cases it is practically impossible to accomplish anything by attempts at toilette—such eyes may as well be bandaged up at once and the updrawn pupil can be brought down later to the center of the cornea by an iridotomy which can be easily made, but this does not belong to my subject.

**After-Treatment:** In regard to the after-treatment, there is little to be said because little treatment is required, as a rule. I think, speaking generally, that the agricultural people of Northern India are good subjects for operation. They are tall, with plenty of bone and muscle and give one the impression of being underfed,

and very old for their years, and it is rare to see one, male or female, carrying a pound of superfluous fat. On the other hand, the shop-keepers, artisans, and others who lead sedentary lives in the cities and villages, and are, perhaps, better fed, take on more flesh, become gouty and rheumatic and seem to react to inflammatory complication about as our own people do. I have seen three cases of corneal infection that ran as severe and painful a course as any I have seen at home, and the same is true of three or four cases of iritis and one of iridlo-cyclitis, so I know that it is idle to assert that these people (although they do live close to nature) enjoy any special immunity from post-operative complications. Whatever immunity they may enjoy I am persuaded is due to the thorough operation employed, to the use of clean instruments and a field of operation as nearly sterile as it is possible to obtain among a people who are naturally dirty, and 80 per cent of whom are estimated to have trachoma in some of its stages. There is no nursing as we understand it in the hospital. Jullundur City is a municipality of perhaps 50,000 people. The hospital is supported by the city and it is too poor to provide such a luxury as nurses, and the patients would rebel if attempts were made to have them lay aside their dirty wraps and be bathed and prepared for operation by a nurse. Some relative or friend usually comes to the hospital with the patient to feed and look after his or her wants. Without nurses it is not possible to have much control over them. In making daily rounds through the wards of the hospital it was not uncommon, in fact, I think it was the rule, to find patients who had been operated on the day before sitting up in bed with a sheet or blanket over their heads. I have only digressed at this point to show that some of the conditions which conspire to defeat the purpose of toilette are not faults of the Smith operation, but are inherent in the patients themselves. This will also explain some cases of delayed healing of the section, of late presentation of a head of vitreous and prolapse of iris in the wound. Another condition which has seemed to delay the healing in a few cases is that in a hot country like India it is necessary to have wide verandas around the hospital and in the crowded season I have seen as many patients in bed out on them as in the wards. I have seen some late prolapses of iris which I am satisfied were due to the patients squeezing the eye-lids because of the bright glare of the sun, and I have

seen a few prolapses occur from too early opening and dressing of the eyes, so that I accept Smith's contention that they should not be opened *except for cause* before the 7th or 8th day, when, as a rule, they are fit to leave the hospital with a green shade over their eyes. I use the word "fit" with some reservation because there can be no question but that a longer stay in the hospital would be desirable, if it were possible in its crowded condition in the season when every bed is in demand, because these eyes, while remarkably free from post-operative inflammations, do not enjoy an absolute immunity from them; therefore, a longer stay would be desirable. Any open-minded person who will visit Smith's clinic will be convinced, I think, of the accuracy and fairness of these statements. In the medical treatment the traditional Blue Pill is still much in evidence. Smith insists that the pendulum swung too far from mercury in the treatment of post-operative eye troubles and that it is still the same old standby, in connection with leeches, on which our fathers relied. My limited experience does not entitle me to an opinion on the subject, but I do know that in two cases where relief from the pain of iritis was not secured after two days' trial of these means, prompt and lasting relief followed the use of a saline cathartic and our American favorite sodium salicylate, given according to the plan of Gifford, of Omaha.

The treatment of prolapse of iris need only be referred to. It should be treated exactly as in cases occurring after regular operations.

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## THE ATTITUDE OF THE PROFESSION TOWARD THE NEW OPERATION FOR THE EXTRACTION OF CATARACT IN THE CAPSULE — THE SO-CALLED SMITH-INDIAN OPERATION.

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For a number of years there have appeared from time to time in the medical journal accounts of the new operation for the extraction of cataract in its capsule by the method of Major Smith of Jullundur, India.

Several English surgeons in the India Medical service, and lately a number of American surgeons have visited Major Smith



and operated with him, reporting their impressions on their return. Stimulated by Major Smith's writings and by the writings of a few pioneers in this field of work, many operators in various parts of the country have attempted extraction in the capsule by a variety of methods suggested by what has been termed the "Indian operation" and gradually we are obtaining reports of their results which, with the reports brought back by those who have worked under the direction of Major Smith in his Indian clinic, should throw some light on this interesting subject.

Dr. Arnold Knapp, who visited the Jullundur clinic several years ago, was the first to bring the subject forcibly to the attention of the American profession, and, after the originator of the new operation had visited this country, addressed the American Ophthalmological Society and operated in New York, and Dr. Greene of Dayton had performed a series of operations and read a paper which led to a free discussion in the section on ophthalmology of the American Medical Association, the new operation may be said to have been fairly launched.

Many operators have undertaken a careful study of the subject and, in pursuance of this study, in the autumn of 1909, Dr. Greene, Dr. Vail and the writer enjoyed a most interesting experience as the guests of Major Smith, observing his methods and performing a large number of these operations under his immediate direction, and the reports of our work are now a matter of record in the medical journals. There is gradually being accumulated a considerable body of literature on this subject and we will await with interest the judgment of the profession after other operators have given the method a fair trial.

As a technical procedure the new operation is one requiring careful study and some training if the operator is to avoid falling into errors which may result disastrously and, in some respects, it constitutes a great innovation, requiring us to adjust and correct our preconceived ideas on a number of points as to how the structures of the eye will act under force exerted in a certain manner and especially as to its power of resistance to the force used in expelling the lens when employed in accordance with the plan proposed and practiced by Major Smith.

**Any** one may make a large corneal section and, by sufficient pressure, cause the lens to be expelled, but, unless certain precau-

tions are observed, he is apt to find that, in a number of his cases, a considerable amount of vitreous will come with it and the result will be a failure, or only a qualified success. Many have tried it and the results have varied greatly, some have had excellent results, but a number have reported loss of vitreous and other accidents in such a large proportion of cases as to cause them to abandon the operation.

Those of us who have seen this operation performed by its author in his own hospital on the hundreds of cases who apply to him for relief from blindness know positively that, whatever may be the final decision as to the advantages or disadvantages of this method as practiced in Europe and America, it is a decided success as practiced by Major Smith in India.

This should not, however, be interpreted as meaning that every man who has seen and successfully done this work in India is therefore a convinced advocate of its application to all cases in this country. The subject is by no means a simple one and it is my strong impression that when it has been carefully worked out by conservative men who have large numbers of cases on which to test its advantages, it will be found that, for a more or less well defined group of cases it is, when properly executed, by far the best operation, but that there are other cases in which the old method is decidedly preferable. Just how we shall make this selection must be determined as the result of a careful study of our American cases under the conditions imposed by our own practice.

This is not, in my opinion, a proper subject for partisanship, the case is still in the hands of the court, and personally I have endeavored, in spite of the brilliant results I have witnessed and the satisfactory results I have obtained in a few cases since my return from India, to avoid being drawn into the position of over-zealous advocacy.

Like some other brilliant surgical procedures this method has, by many, been loved not wisely but too well: and the reported cases, and especially those cases the accounts of which have not as yet found their way into written reports but have passed from mouth to mouth, have not all been entirely successful. In fact numbers of decided failures have been reported and in several instances these failures have apparently been due to two causes which not infrequently serve to retard the progress and postpone

the adoption by conservative men of most excellent operative methods. I refer to the performance of new and complicated operations by those who have not taken the pains to inform themselves accurately as to all the details of the new method, and the performance of what may be termed "exhibition operations" in which the operator, who may have all the knowledge and skill necessary for entire success under proper conditions, in his desire to accommodate those who wish to witness the operation, is induced to operate away from his accustomed surroundings on cases which he has not had the opportunity to select and study carefully and over which he can exercise little or no control during the after treatment.

I maintain that *for such an operation as this* the circumstances are very exceptional in which a surgeon, who is doing good work at home, can be assured of equally good results when operating in other clinics on cases whose selection, preparation and after treatment he does not control. Unfavorable results under such circumstances often occur and such a procedure fails to do justice either to the patient, the operator, or the profession.

This is, to a certain extent, an ethical question and I may be criticised for raising it here, but I am sure that it is pertinent and that a more conservative course in this respect would tend to bring this valuable operation before the profession in such a manner as to give it a much fairer hearing than it has thus far received.

I hope I will not be misunderstood in what I have said, for nothing could be farther from my mind than the wish to sit in judgement on my friends in condemning acts for which they may have had good reasons, but if the practicability and value of an operation are to be fairly and properly estimated and we are to deal with the strictly scientific subject in a scientific manner, we must begin by eliminating those cases in which the method of operation fails to correspond with the method as described by its originator and also those cases in which the selection of the patient and the circumstances surrounding the operation do not do full justice to the method.

While I have taken some pains in my endeavor to learn something of this new method, my object in the present paper is not to describe it, nor to express an opinion on its merits, as these points

have been quite fully dealt with elsewhere, but to make a brief study of the attitude which the members of the profession have assumed toward it.

When we consider the number of years that have elapsed since Major Smith first began to publish his large series of successful operations by his new method it is somewhat strange that there should be only a very few ophthalmic surgeons in the whole United Kingdom who have adopted it and, even in India, where there has been ample opportunity to study his method and see his results, it is only of late years that any considerable number have spoken favorably of it. This attitude could be more easily understood if it were due to its having been thoroughly tried and found wanting but, with a few exceptions, judgment was pronounced without anything that could be called an adequate investigation. Some of the technical details of Major Smith's methods in this and other operative procedures are original and **not** in exact accord with the established methods as seen in the London hospitals, and with their attention riveted on these foibles, of technique his Indian and English critics seem to have entirely lost sight of the value of his contribution to our knowledge of the great principles underlying cataract extraction and the fact that he has shown us how we may successfully deal with immature cataract.

As has been the case in this country, a number of eminent Indian surgeons of large practice, after reading descriptions of the method, or making a cursory examination into the subject, performed a series of operations by a method which they conceived to be that of Major Smith, or their modification of it, and not obtaining satisfactory results, condemned it without further hearing and, having condemned it were content. In one instance, however, that of a prominent surgeon in a neighboring district, after condemning it as the result of a series of some three hundred operations, in which his published report showed vitreous loss in about one third of the cases, a visit was made to Jalandhar during my stay at the clinic and, after performing a series of operations there and correcting his false impression of how the lens should be extracted, he returned to his own district, operated with great success and became a convert to the new method. This case shows what would probably have occurred in many other instances if

the surgeons, who condemned the method, had taken the trouble to thoroughly study it by actual practice under the immediate direction of the man who originated it.

The habit of implicit reliance on old methods and established authorities is so strong with the average English surgeon that a new idea must have great hardihood if it succeeds in obtaining recognition. They display a great unwillingness to take the trouble to examine evidence without prejudice and it would seem that their opinions will prove to be of little assistance to us in our effort to estimate the value of this new method.

Some of the German authorities seem thus far to have failed to grasp the idea involved in the new method and to insist upon confusing it with Pagenstecher's operation which is an entirely different procedure, while others reveal the fact that they have had little experience with the method by their solicitude on account of the supposed traumatism to the eye.

When they have become deeply enough interested to make a thorough study of the histological conditions involved and the strength and resisting power of capsule and suspensory ligament they may make a valuable contribution to the subject, but thus far the new method has not been received with great favor in Germany.

Professor Axenfeld, of Freiburg, raises a very pertinent question as to the possibility of racial characteristics influencing the course of cataract in the Indian peoples and suggests that a series of our own cases should be observed for a period of several years before we can determine whether our results are permanently as good as in the Indian.

So far as one may judge by such observations as may be made during a stay of a few weeks in an Indian clinic the Indian would seem to have no advantage over the Caucasian but, of course, a series of years would be required to determine such a point accurately.

The only positive evidence which I have seen of such essential difference between the Indian eye and that of the American was revealed in a series of chemical analyses of crystalline lenses which was made by Dr. W. E. Burge of Johns Hopkins University and reported in the *Archives of Ophthalmology* of September, 1909. He found 3.63 per cent of silicon in Indian, but none in American lenses.

And what shall we say of the attitude of the ophthalmic surgeons of America toward this new operation? As might be expected we find great diversity of opinion as to its merits and, until quite recently, there has for some reason, been such a general misunderstanding of some of the most important details of the operation as practiced in the Jalandhar clinic, and, as a consequence, so many failures or qualified successes that it is not strange that many of our most capable and conservative ophthalmic surgeons have held aloof from it.

The man who has had the largest American experience and who deserves the credit of having done more than any other surgeon in this country to bring this operation to the attention of the medical profession, Dr. D. W. Greene of Dayton, acknowledged when in India that the operation which we saw there differed in some important respects from his previous interpretation of the operation as described by Major Smith when he was in this country, and when we read or hear the descriptions of the variety of methods which have been employed, it is not strange that we should have a corresponding variety in the results reported. Nor is it strange that conservative ophthalmic surgeons should hesitate to proclaim themselves as enthusiastic advocates of the new method.

Operators and writers seem to have lost sight of the great advantage that Major Smith has had in being able, as he is, to step from one table to another and do a series of fifty or more operations in quick succession day after day for many weeks each year, and they seem to fail to realize that, when a man so original, ingenious and alert has availed himself of every point which he could gain in one series of cases to improve his technique in the next series, it might be worth their while, before trying to modify the method to conform to their preconceived ideas, to adopt the originator's in every detail until they have mastered it.

Only partial control of the lids, a moderate sized section and pressure exerted in accordance with one's own ideas may occasionally yield a successful extraction in the capsule but it is scarcely fair to judge the Smith operation by the results obtained by such methods.

When one has witnessed the easy and smooth deliveries which are the rule in the Jalandhar clinic it is not strange that he should deem it well worth his while, if he is to employ extraction in the

capsule at all, that he should employ the originator's method in all of its details until he has discovered a better one. And, when we hear that Dr. A. or Dr. B. has performed ten of the new operations, but prefers a peripheral section and has other ideas of his own as to how the operation should be performed, we are not surprised to learn that later Dr. A. and Dr. B. have given it up because they have had too much loss of vitreous or failure from some other cause.

Adverse reports have come from Boston, from St. Louis and from many other points and we hear of failures recorded in Chicago, in Cincinnati, in Cleveland and in Philadelphia and it is not strange to me that, when in November last I reported a series of successful extractions which I had performed in Major Smith's clinic, and many others which I had witnessed, to the Ophthalmic Section of the New York Academy of Medicine that it should have been received with manifest reserve and without discussion, and that the president should have made the statement that the section had not been favorably impressed with the method as it had previously been presented to them.

This, in view of American experience up to that time, seemed to me a most natural attitude for a body of conservative and careful surgeons to assume, and, while my Indian experience gave me a very favorable impression of the method, I am free to confess that, if I were to judge it by American reports of results, I should be inclined to hold aloof from it.

What then is the reason for so many failures in this country? I am strongly inclined to the opinion that, as a profession, we are open to the charge of approaching such subjects in a spirit that can scarcely be properly called scientific.

As was stated above, the performance of new and complicated operations by those who have not taken the pains to inform themselves accurately as to all the details of the new method, and the performance of what may be termed exhibition operations on unknown patients and under unknown conditions may account for the fact that the number of failures in this country has been so entirely out of proportion to what has been observed in Major Smith's clinic.

## News Items

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Dr. Denig has been made professor of Ophthalmology at Columbia University, New York.

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Dr. Harvey B. Gratiot, of Dubuque, Iowa, was recently elected censor of the Dubuque County Medical Society.

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Dr. Chas. P. Geudtner, an ophthalmologist of Chicago died January 5th from pneumonia, aged 44.

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Dr. Harry Friedenwald, of Baltimore, has been elected president of the Jewish Home for Consumptives.

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Professor Hertel, of Jena, has been called to succeed Professor Schirmer, of Strassburg, who has retired.

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Dr. Karl Meurer, an ophthalmologist of Wiesbaden, has been given the title of Sanitätsrat.

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Professor Dr. August V. Reuss has been called to succeed Prof. A. Monti as director of the Allgemein, Poliklinik, Vienna.

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Dr. John E. Weeks, of New York, has been elected president of the Medical Society of the County of New York.

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Dr. Walter L. Vercoe, of Lead, S. D., was elected secretary of the Black Hills District Medical Society at the annual meeting held January 14th.

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Dr. C. B. Voight, of Mattoon, Ill., oculist and aurist to the Memorial Methodist Hospital, was recently elected president of the Coles County Medical Society.

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Drs. Gilbert E. Seaman, William S. Stanley and Charles J. Coffey were elected as ophthalmologists on the staff of the Johnston Emergency Hospital, Milwaukee, Wis.



Dr. Herbert Harlan was given a reception in honor of the 30th year of his connection with the Presbyterian Eye, Ear and Throat Charity Hospital of Baltimore, on January 10th, and was presented with a loving cup.

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Dr. J. Paul Roebuck, of Lititz, has been appointed physician and Dr. Walter B. Weidler consultant to the eye, ear, nose and throat department of the Lancaster General Hospital, Lancaster, Pa.

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Dr. Geo. E. de Schweinitz has been elected president of the College of Physicians of Philadelphia, a rare honor which has fallen to the lot of few ophthalmologists.

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Dr. Benjamin E. Gleason, of Danville, Ill., has been appointed oculist and aurist for Danville to the Chicago & Eastern Illinois Railroad and the Illinois Traction System.

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Dr. Derrick T. Vail, of Cincinnati, has returned from the Orient, where he visited Major Smith, of Jullundur, India, and acquired an extensive experience in the technique of the Smith method of extracting cataract in the capsule.

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Dr. Emory Hill, late resident surgeon Wills Eye Hospital, Philadelphia, has associated himself in practice with Dr. Cassius D. Westcott, of Chicago.

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The Vermont State Board of Medical Registration voted not to receive applicants after Jan. 1, 1911, who have not had instruction in simple refraction.

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Dr. D. W. Greene, of Dayton, Ohio, who was also a visitor at Major Smith's Jullundur Hospital, has returned. Dr. Greene's trip was prolonged by a sojourn in the European clinics.

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The following were elected to office in the Milwaukee Ophthalmic Club, at the annual meeting held Jan. 18, 1910: Dr. C. J. Zimmerman, president; Dr. Nelson M. Black, vice-president, and Dr. Samuel G. Higgins, secretary-treasurer.

Dr. Samuel G. Higgins, of Milwaukee, attending otologist, rhinologist and laryngologist to the Milwaukee County Hospital, was recently operated upon for acute appendicitis, and has made a good recovery.

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At the annual meeting of the Eye, Ear, Nose and Throat Section of the Jackson County (Mo.) Medical Society, held January 13, 1910, Dr. J. W. Kimberlin, of Kansas City, was elected chairman and Dr. J. W. Sherer, secretary-treasurer. Regular meetings are held the second Thursday of each month in the club rooms of the General Hospital, Kansas City.

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Excellent results are reported in the bureau of the state department in New York created one year ago to push the work of prevention of blindness in the new-born. Dr. Eugene H. Porter, State Commissioner of Health, reports that the registered physicians of the state have pledged themselves to use the silver nitrate solution, which has been sent out by the Health Department.

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MEDICAL REVIEW OF REVIEWS. Beginning with the January, 1910, issue the old established *Medical Review of Reviews* will be edited by Dr. William J. Robinson, editor and founder of the famous *Critic and Guide*, *Therapeutic Medicine* and *The American Journal of Urology*.

The editorial offices of the *Medical Review of Reviews* have been removed to 12 Mt. Morris Park W., New York City. The scope of the journal will be enlarged and every department will be strengthened. The subscription price remains the same, namely, \$2.00 per annum.

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Dr. Samuel Benedict St. John, of Hartford, Conn., secretary of the American Ophthalmological Society from 1888 to 1908, and president in the year 1909; president of the New England Ophthalmological Society in 1890-'91; member of many special societies; fellow of the New York Academy of Medicine; consulting ophthalmic and aural surgeon to the St. Francis Hospital, Hartford and Litchfield County Hospital; director of the Hartford Public Library; lecturer on ophthalmology in Yale University from 1881 to 1905, died suddenly of angina pectoris at his home in Hartford, December 21, 1909.

# THE OPHTHALMIC RECORD

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## A REPORT OF THREE CASES OF GLIOMA RETINAE.

BY EDWARD STIEREN, M. D.,  
PITTSBURG, PA.

Glioma, or to use the term suggested by Verhoeff, *neuroma retinae malignum*, is the only primary neoplasm of the retina. It is a rare disease, occurring about once in every twelve thousand ophthalmic patients, and is always fatal unless surgical intervention is instituted early.

In three cases herewith reported, one, a double case, died because operation was refused; another succumbed for the reason that the disease had progressed too far for enucleation to be successful; the third case recovered and shows no signs of recurrence eighteen months after operation.

Case 1. Wm. J., 2 years and 5 months old when examined, August 22, 1905. Six months before the parents had noticed a yellowish-white reflex from the right pupil. No history of traumatism or of any illness.

The right eye presents a widely dilated pupil with a striking amaurotic reflex. Tension + 1. Ophthalmoscope and Sachs' transilluminator show the presence of a mass occupying the entire vitreous chamber, pushing the lens forward.

Left eye, pupil is contracted, but dilates well with atropin; tension normal. Ophthalmoscope reveals a mass with an elevation of 4 D., about the size of 3 papilla diameters, occupying the lower inner part of the vitreous chamber.

A diagnosis of double glioma was made, the serious nature of the affection explained to the parents, and double enucleation proposed as the only probable means of saving the child's life. The parents, naturally alarmed at this sad advice and hopeless prognosis if it were rejected, readily consented to a consultation and the little patient was accordingly examined by Dr. J. A. Lippincott, who concurred with me in the diagnosis, advocated removing the right eye immediately with careful watching of the growth in

the left, if microscopic examination of the neoplasm in the right eye showed malignancy.

The parents took the position that death would be preferable to a life of blindness, and accordingly took the child home. The course of the disease was explained to them and every argument used to prevail upon them to submit the child to a double enucleation with the probable result of eradicating the disease.

I did not have the opportunity of examining the child again. Dr. McAdoo of Ligonier writes as follows:

"The little Johnston boy that I accompanied to your office in August, 1905, died January 21, 1906. He was almost three years old at the time of death. The history of the case you are very well acquainted with. Several weeks prior to death the eyes were greatly distended and discharging pus and apparently the eyeballs were perforated by the tumors as a spongy, bleeding mass appeared between the lids. Complete paralysis of the entire body one week before death, also continuous convulsions several days before death; the boy lay in a stupor or unconscious condition for some time, and had lost control of the rectum and bladder."

The two following cases present several features of unusual interest: The one closely simulated gross tubercle of the choroid, the patient dying six weeks after enucleation with all the classic symptoms of tuberculous meningitis. The other, viewed early with the ophthalmoscope, was apparently a new growth of the optic nerve-head, subsequently extending downward and forward into the vitreous chamber; microscopic examination, however, proved its origin to be in the retina without involvement of the nerve.

Case 2. Martha M., three years and four months old when first seen, July 3, 1907. The condition on this date was as follows:

Right eye diverges strongly, with movements of the globe limited in all directions; globe enlarged and protruding. Lids bluish-white in color, with veins dilated; no edema nor swelling of the tissues about the orbit. The pupil is dilated and fixed, the lens is salmon-hued and translucent, behind which can be seen a grayish mass. No fundus reflex; light perception apparently absent. Transillumination with Sachs' lamp shows the presence of a mass occupying the whole of the vitreous. Parents have no-

ticed this condition of the pupil for about a year. Tension  $+1$ . Left eye normal.

Immediate enucleation was advised and performed two days later. After the globe was enucleated the apex of the orbit was found to be much indurated and bleeding was profuse from the stump. The optic nerve, 9 mm. of which was secured, was twice the thickness of a normal nerve and felt fatty when pinched between fingers. Evisceration of the orbit was proposed to the parents at the time, but was not agreed to.

The globe was sectioned antero-posteriorly after freezing, showing the iris to be in contact with the cornea, the anterior chamber obliterated; the lens was shrunken, of a pinkish hue and forced forward by a dirty gray mass which occupied the entire vitreous chamber. This mass was partly calcareous, but for the greater part was the consistency of white brain substance. The optic nerve and sheath were both thickened.

The socket behaved in an unsatisfactory manner afterward, the tissues remaining swollen and discharging a sanious mucoid fluid. Microscopic examination of the intraocular growth in the meantime showed it to be glioma of a melanotic type.

Three weeks later the child began to show signs of basilar involvement, evinced by headache, vomiting, slow and intermittent pulse, but with no rise in temperature. In a few days she became apathetic, developing the hydrocephalic cry. Stupor gradually became more marked, all nourishment and medicine were refused, convulsions set in, and, finally toward the end, retraction of the head became established, and the little patient succumbed. An autopsy could not be obtained.

Case 3. May C., aged  $\frac{1}{2}$  years, was first seen February 12, 1908. The right eye is smaller than the left and has a tendency to turn upward, having been in this condition, according to the mother's statement, since the child was one year old. Vision is nil, with the exception of a small sector preserved on the nasal side. Direct and consensual pupillary reflex present. Lens and media clear. Entire fundus is dotted with minute deposits of pigment and small atrophic areas. The disc has a peculiar appearance of being pushed inward, presenting an elevation of 8 D., sharply defined on the temporal side, but blurred and indistinct above, nasally and below. The central vessels cannot be demonstrated as such, but several vessels pass over the summit of the elevation. A

tentative diagnosis of tumor of the optic nerve was made, the parents informed that an enucleation might become imperative later, and instructed to return the child in a month for observation. The left eye is negative.

Desiring another opinion, they consulted Dr. W. F. Robeson, who inclined to the opinion that the condition was a congenital one from the pigmented fundus and general atrophic condition of the entire globe, but insisted that the eye should be watched. Construing this favorably, the parents' fears were allayed, and they neglected to bring the child for further observation until July 1, 1908, about five months later. In this interval the condition had entirely changed. No details of the fundus could now be seen except a small area in the upper temporal field. A silvery-gray mass, bifurcated, a small limb extending upward, the larger limb downward, and spreading in a fan-like manner, had developed since the last examination. Blood vessels pass over the growth, and it contains numerous scattered, glistening areas. Glioma, probably arising in the nerve-head, was diagnosed and immediate enucleation advocated. Desiring a third opinion, the parents were referred to Dr. H. F. Hansell, who confirmed the diagnosis, stating that "the growth may and no doubt did start in the nerve-head and has advanced so that its bulk is now in the lower anterior part of the vitreous, proceeding from the retina. Wurdemann's transilluminator shows the presence of a tumor, and by it the outlines can be fairly marked out."

Enucleation was performed July 8, 1908, about 10 mm. of the nerve being included. The globe, atrophic as illustrated, was sectioned antero-posteriorly after hardening. The only apparent noteworthy macroscopic appearance is the gray growth presumably arising in the nerve-head and extending downward and forward. Subsequently viewed under the microscope, sections through the nerve and adjoining retina revealed the fact that the glioma sprung from the retina, sending its first process upward, obscuring a view of the disc in part, and accounting for the early ophthalmoscopic picture of apparent optic nerve neoplasm. A glass Mules sphere was implanted in Tenon's capsule, but was ejected on the fifth day. In other respects the socket healed kindly and there has been no recurrence up to the present time.

Microscopic examination by Dr. F. Proescher:

Case 2. The tumor mass occupies the entire vitreous arising in the retina, and consists partly of elongated roundish, partly of spindle and star-like interweaving cell masses. The cells are arranged in parallel rows or in irregular, roundish nests. Between the cell masses is seen a coarse intercellular substance, here and there containing a few elongated star-like or roundish cells filled with a fine, granular, dark brown pigment. Flattened pigmented cells are seen next to the sclera, in some instances entering it, but for the greater part the tumor mass has pushed in between the choroid and sclera, detaching the former from the latter.

Greater magnification shows the cells to be almost entirely free from protoplasm. The nuclei show numerous fine chromatin bodies, each with a small vesicular nucleolus.

Case 3. Cornea, anterior chamber, iris, ciliary body and optic nerve normal. In front of the papilla, pushing the vitreous forward, is a polymorphic tumor mass, richly vascular. The tumor arises, as can be seen in different fields, from the retina. The retina is detached from the choroid by a large, flat hemorrhage. The tumor mass is composed partly of roundish, partly of spindle-like cells elements arranged in parallel rows and in irregular round or oval nests. Large and small well-formed vessels are numerous.



Photomicrograph of Case 2. Magnification  $\times 60$ .

Between the nests of cells is a dense, fine fibrillary substance. Higher power shows the deeply stained cell masses to be completely free from protoplasm. Glioma cells with fibrils could not be demonstrated.

3603 FIFTH AVENUE.



Photomicrograph of Case 3, Showing Normal Optic Nerve. Magnification  $\times 150$



Photograph of Case 3 (Natural Size), Showing Neoplasm Apparently Arising in the Papilla.



## A CASE OF OSSEOUS TUMOR OF THE ORBIT.

HOWARD F. HANSELL, M. D.,

PHILADELPHIA.

The origin of bony growths is usually to be found in disease of the underlying bone or of that part of the wall of the orbit from which they spring. Bull believes that syphilis in the third stage is the cause in the majority of cases. An otitis or periostitis is set up by syphilis, tuberculosis, malignant disease of the nostril or chronic nasal catarrh by which bone cells are deposited which proliferate or become heaped up to form an appreciable tumor. Since the ethmoid plate is the most frequent site of orbital osseous tumors, it is not improbable that nasal disease, not necessarily specific, is a common cause. Inflammation of the nasal mucous membrane concentrated in one or more foci, destroys the membrane and adjacent bone and a perforation allows access of the inflammatory process to the orbital periostium. At the site of the perforation, the membrane is elevated by inflammatory products and an aggregation of bone cells.

The signs of orbital tumor are not significant of the nature of the growth. They are exophthalmus, dislocation outward and downward of the ball, inaction of one or more muscles, ptosis, diplopia and occasionally optic neuritis. The diagnosis of a bony tumor may be made in those cases in which the growth is near enough to the anterior margin of the orbit as to be palpable; but few cases are so favorably placed. Tumors arising from the ethmoid plate cannot always be recognized as hard. They are covered by much soft tissue and the tactile sense may be deceived.

The location of the tumor in the orbit is rarely indicated by the degree of exophthalmus or by the loss of motility. A slight increase in the contents of the orbital cavity, disarranging the relation between contents and capacity, may produce signs inconsistently great with the size of the tumor. For example, venous hyperemia of the orbit, accompanying Grave's disease, may be responsible for a high grade of exophthalmus. In the majority of cases of orbital tumor the ball is forced forward, downward and outward, independently of the site of the growth so that the position of the eye in the orbit or the line of its projection from the orbit

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\*Read before the Section on Ophthalmology, College of Physicians, December 16, 1909.

is not a dependable indication of location. The degree of exophthalmus and of immobility do not bear a close relation to either the size of the location of the tumor, but are more dependent upon the former than upon the latter.

Miss W. consulted me in July of the present year, stating that the left eye commenced to become prominent two years earlier from no known cause and had slowly increased. She complained of some pain near the median wall. Vision had not deteriorated, although at times it was duller than at others. She had nearly constant diplopia in all parts of the field. The eye was proptosed markedly down and out; rotation upward was abolished and movements in all directions were restricted; the media were clear and the fundus healthy; the pupil was dilated, but reacted. The anterior edge of a tumor was felt above and to the nasal side of the ball. No distinct characteristics of any form of tumor were evident, but from the frequency of sarcoma in this situation and from the pain it was believed that this tumor was also a sarcoma and enucleation of the tumor and if necessary of the ball or evisceration of the orbit was advised. An incision through the lid and other tissues anterior to the tumor was made and when these structures were drawn aside, the anterior surface of the growth presented. It was hard, smooth and nodulated and covered by periosteum. The tumor proved to be round and about the size of a horse chestnut and attached to the inner orbital wall by a round small pedicle of bone. With the hammer and chisel the pedicle was broken and the tumor removed, leaving a small perforation into the ethmoid cells. The lid and underlying tissues were sutured and an iodoform gauze drain inserted.

The patient recovered without accident and returned to her home in a few days. The eyeball was still immobile and dislocated, but to a less degree than before the operation. Three months later the ball had returned to its normal position in the orbit and motion in all directions—except in that controlled by the superior oblique muscle—was restored. The ptosis had been recovered from and the scar made by the dissection was scarcely visible. Diplopia in the extreme lower part of the field remained, but was not annoying; vision was of full acuity. With her head turned slightly to the right, the images of all objects were fused. The perforation through the ethmoid plate had probably not healed, because the patient

states that when she inhales deeply, she has a sensation of cold in the nasal side of the eye.

Notwithstanding the usually unfavorable prognosis of operations for sarcoma of the orbit, and indeed the frequently expressed opinion that operation hastens recurrence and stimulates growth of the tumor, or whatever may remain of it after operation, to more rapid growth, the effort at removal seems to me an imperative duty. If the tumor is malignant, enucleation, if it accompanies any good at all, may relieve distressing symptoms at least temporarily, and if not malignant, and, as stated above, the differential diagnosis between malignant and non-malignant tumors is not always possible in the early stages, operation, particularly when the eyeball need not be sacrificed, may result in permanent cure.

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### TOXIC AMBLYOPIA OF DIABETIC ORIGIN OCCURRING IN A YOUNG WOMAN—A RARE SYMPTOM OF THE TOXEMIA OF DIABETES.\*

BY WENDELL REBER, M. D.,

PHILADELPHIA, PA.

It is altogether likely that diabetes is more prone than any other dyscrasia to eventually reveal its toxic phases by all manner of obscure ocular symptoms. Prominent among these is cataract, ocular palsies, limitation of the power of accommodation, pseudomyopia and retinitis. Less frequent are keratitis, iritis, choked disc and neuroretinitis. Among the rarest manifestations are acquired hypermetropia (mentioned by Horner) and central toxic amblyopia. The latter condition is the one to which attention is herein directed. Quite a number of cases put down in the literature as instances of diabetic toxic amblyopia have occurred in smokers and much controversy has arisen as to whether such cases owed their central amblyopia to the nicotin poisoning or to the diabetic toxemia itself. That diabetics show a lessened resistance to the poisonous action of nicotin is a proposition that is more and more accepted by the ophthalmic profession every day. A most conclusive case in point is mentioned by Holmes Spicer (Posey and Wright, p. 458). A man, aged 54, had been known to have diabetes for at least two years. About 4 months before he was first

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seen he had retired from active work and, time being heavy on his hands, he had taken to smoking for the first time in his life. He had smoked very moderately—not more than one pipe a day—and his sight began to fail about three months after beginning to smoke and about one month before he was seen. His sight at that time was  $R.=6/60$ ,  $L.=6/60$ ; he had a central color scotoma, no peripheral contraction of the fields, and his optic discs were rather pale. He at once discontinued tobacco, but his sight continued to fail and two months later was reduced to  $2/60$  in each eye.

In all the earlier reported cases, the condition is described as amblyopia without discoverable ophthalmoscopic changes. More recent writers, however, claim to find changes, as for instance, Schmidt-Rimpler, who affirms “that the optic nerve head shows slight but undoubted pathologic changes oftener than is generally believed.” Among these he notes hyperemia of the disc, but in the larger number pallor of the temporal half of the nerve head, and “some little connective tissue disturbance on its surface.” Just what picture Schmidt-Rimpler wishes to convey by this last descriptive phrase it is difficult to understand or imagine.

Amblyopia of the character above described occurs in diabetics of fair as well as in those of very poor health. J. B. Lawford pronounces it rare in patients under 30, and notes that in most published cases the age was over 40.

Necessarily such cases simulate very closely the well known forms of toxic amblyopia due to alcohol and tobacco. In both there is subnormal vision: in both a relative blind spot in the center of the visual field; and in both it is practically impossible to detect any ophthalmoscopic changes in the optic nerve or retina, Schmidt-Rimpler to the contrary notwithstanding. It was about 1879 that Galezowski (*Rec. d'Ophthalmol.*, 1879) first drew attention to these almost parallel conditions and insisted that they were of different origin. Even since that time a goodly number of instances have been recorded in which it could not be definitely decided whether the glycosuria or the tobacco-alcohol element was the determining factor. Within the past four years the writer has studied five cases, four of which fall into this doubtful class. They were all men and all fairly free smokers. One was 29, one 32, one 47 and one 56. The 29-year-old smoked a great deal, but had never drunk at all. He averaged about  $2\frac{1}{2}$  per cent sugar

and frequently showed acetone. His vision never rose above 5/15. The 32-year-old smoked and drank freely. He averaged about 1½ per cent of sugar and showed acetone once. His vision was 2½/60 in each eye when I first saw him and after two months' treatment had risen slowly to 5/45. He was a carpet printer and stated that he had worked all day for years in a room filled with dust that was laden with anilin-dyed particles of wool and cotton. It is not surprising that with a glycosuria-toxemia plus a tobacco-alcohol toxemia plus a possible anilin toxemia he should develop a chronic low grade retrobulbar neuritis. This was the only one of these four cases that exhibited optic nerve changes discernible with the ophthalmoscope.

The 47-year-old smoked excessively and drank beer only occasionally. His vision was R.=5/45, L.=5/20. He averaged about 2½ per cent sugar, but at no time was acetone in evidence. His urea ran about 0.9 per cent. All the three preceding cases exhibited relative central and paracentral scotoma.

The 56-year-old was a champagne salesman who smoked villainously. His vision was 5/22 and 5/15, and his sight had been failing for seven months. He averaged about 3 per cent sugar—showed no acetone. There was an absolute scotoma in each eye. Under treatment his vision rose to 5/7 in each eye. Later he contracted pneumonia and drifted into a tubercular condition, from which he finally died. All of these four cases were diabetics who presented a toxic amblyopia as one of their symptoms—but inasmuch as all of them smoked, the writer does not feel that their optic nerve condition could be properly put down as due purely and simply to the glycosuria. In all of them tabes was excluded.

Leber (Graefe Saemisch Handbuch, 1st edition), who has written exhaustively on this subject, believes that the existence of diabetes renders the individual more susceptible to the toxic effect of tobacco than he would otherwise be, and this point of view is much strengthened by Holmes Spicer's case, which has been related. So that it is quite possible that there is a class of mixed cases standing midway between the toxic amblyopia plainly due to tobacco-alcohol poisoning and those due to the toxemia of diabetes. If so, the four cases just related would fall into that class.

But the evidence is slowly accumulating that central amblyopia may be induced by diabetes without the aid of tobacco or any other extraneous poison. In support of this contention the following case history is submitted:

Miss B. A., aged 29, accountant, came under my observation October 13, 1907, stating that her eyes were bothering her a great deal at night in any reading or sewing. Her physician had previously informed me that she was the subject of glycosuria, which had been first recognized about six months previously. When he first detected the condition the specific gravity was 10.36 and there was a slight albuminuria at the same time. Under treatment, however, the albumen disappeared and the sugar was remarkably reduced, remaining somewhere near to 1 to  $1\frac{1}{2}$  per cent.

The conjunctival corneal and lid sensibility were all normal. Indeed, there were no evidences whatever of hysteria or of any organic nerve disorder. At the time I first saw her she was wearing, R. E.,  $-0.25$  sph.  $+0.50$  cyl. axis  $30^\circ$ ; L. E.,  $-0.37$  sph.  $+0.75$  cyl. axis  $135^\circ$ , which had been ordered for her by a competent ophthalmologist three years previously. With these her vision was  $\frac{5}{9}$  in either eye. Her accommodative power was normal in each eye; likewise her muscle balance. Both eyes showed a low grade marginal blepharitis. Save for this, both anterior ocular segments were normal. The keratometer indicated in the right eye  $\frac{1}{4}$  diopter of astigmatism against the rule axis  $90$  or  $180^\circ$ , and in the left eye  $\frac{3}{4}$  diopter astigmatism against the rule axis  $60$  or  $150^\circ$ . With the ophthalmoscope both eyes showed an absolutely normal eye ground, with the possible exception of a slight hyperemia of the nerve head and a doubtful overfullness of the lymph sheaths, such as is often seen in eye strain. When I attempted to measure her eyes under a mydriatic I found it impossible to give her better vision than  $\frac{5}{9}$  of normal in either eye. Suspecting I had overlooked some fine macular changes in ophthalmoscopying her without a mydriatic, I again went over both eye grounds in a painstaking manner, but could find no abnormality whatever. The mydriatic was continued for two days and another refraction done at the end of that time, when again it was impossible to give her any better vision than  $\frac{5}{9}$  in each eye. This second result was:

R., +0.50 sphere +0.37 cylinder axis 30°.

L., +0.75 sphere +0.62 cylinder axis 150°.

The question then arose in my mind as to whether she was not the subject of toxic amblyopia. Accordingly, when the mydriatic had worked out of her eyes, careful perimetric tests were made of both visual fields, and it was found that for a 5 mm. red object there was a rather indefinite relative blind spot in the center of each visual field, and with a 2½ mm. red object a quite definite one, reaching out about 7° toward the normal blind spot in each eye. This accounted for her lowered central vision during the refractive estimates. There were no color reversals in either field.

This case has been closely studied for the past two years and at no time has there been complete disappearance of the scotoma in either eye. The latest charting of the visual field, done in June last (1909), shows a scotoma (estimated with a 2 mm. red object) which is pericentral and extends irregularly from 2 to 5° about the fixation point. The patient's best corrected vision is 5/9 in either eye at the present writing. Both eye grounds continue normal with the ophthalmoscope. The findings in the urine remain about the same as they were two years ago.

Nettleship reports a case of central amblyopia occurring in a 30-year-old woman of thin habit and poor health. The diabetes had been of about seven months' duration. The vision in each eye was 6/6. She could not read the smallest print easily with any lens. There was a small central scotoma for red and green but no limitation of the field of vision. No changes whatever to be found with the ophthalmoscope.

In 1882 Samuel reported a case (from Hirschberg's clinic) occurring in a 52-year-old female in whom iridectomy had been performed for pupillary occlusion following an iritis. The fields of vision are stated to have been almost full, but there was a central scotoma in evidence in each eye. Vision equaled 15/20 and with +5.00 D. the patient could read Snellen 13. The urine contained 4.5 per cent of sugar, the general symptoms were slight and the patient's health was but little impaired.

Moore records two cases, as follows:

Case I. Female, 49 years of age, with a history of diabetes for six months. Rapid failure of vision for one week before coming under observation; much sugar in the urine. Vision in each eye,

20/200. No limitation of field, but a large scotoma for red and green. No ophthalmoscopic changes except doubtful pallor of temporal half of disc. Vision remained stationary. Patient died two years later. No autopsy.

Case II. A 50-year-old female with diabetes for some months. Sugar abundant. Vision failed first in the right eye, at time of observation, 20/50 in each eye, not improved by glasses. No abnormality in the fundi, except a slight dusky hue. No contraction of the fields, large central scotoma for green, relative for red. Six months later vision equaled 20/200 in each eye. Patient died of gangrene of the foot one year after she was first seen by Moore. No autopsy.

These five cases (including my own) all occurred in women, so that tobacco as a causative factor may be excluded.

In several instances the optic nerve of patients dying of diabetes (who during life showed a central amblyopia) have been examined microscopically, notably by Nettleship and Edmunds, Edmunds and Lawford, Fraser and Bruce, and Schmidt-Rimpler. The condition found is one of degeneration of the "pupillo-macular bundle."

Uthoff, in his masterly presentation of the subject before the Thirteenth International Congress in Paris, held that inflammatory symptoms in the papilla are slight and seldom produce anything more than a trifling atrophic discoloration of the temporal portion of the nerve head. Alteration in the retinal vessels he pronounces rare, also perineuritic changes. In this group of cases, alcohol and tobacco hold aetiologically the first place, then come carbon bisulphid, arsenic, iodoform, stramonium and hashish. He asserts that it is justifiable to associate with these, those affections whose anatomic lesions are not yet determined but whose symptoms parallel very closely those of alcohol and tobacco amblyopia. Most prominent among these he places saccharine diabetes.

Fraser and Bruce's case is of more than usual interest, in that the patient suffered from symptoms indicative of peripheral neuritis and that degenerative changes were present in the spinal nerves similar to those in the optic nerves. This patient had been a heavy smoker, but temperate in the use of alcohol.

All the cases examined microscopically had defective central vision during life, and all were smokers except Schmidt-Rimpler's



patient. His case in its clinical features and microscopic findings appears to coincide exactly with the other three that were examined microscopically, and as tobacco and alcohol could be almost certainly excluded in this case, there seems to be reasonable ground for believing that diabetes may lead to an axial neuritis or degeneration similar in its microscopic features to that induced by such toxemias as tobacco and alcohol.

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 1212 SPRUCE STREET.

## TRANSPLANTATION OF FAT INTO TENON'S CAPSULE AFTER ENUCLEATION.

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The various attempts that have been made to form an artificial globe after enucleation have met with only partial success. Glass and metal globes, paraffine and other substances have been used and sometimes will remain in situ but at best they are foreign bodies. If living tissue could be employed its advantages are obvious. In 1901 Barraquer<sup>1</sup> in a *South American Journal* proposed an operation which at first sight would seem ideal, namely the transplantation of living fat from the patient's body. At the

meeting of the German Ophthal. Soc. in 1908 Bartels<sup>2</sup> revived the operation and it has been practiced since to a limited extent in clinics abroad. A report has lately appeared which credits Calez<sup>3</sup> with ten cases either after evisceration or enucleation in the latter with practically uniform good results. The operation which the author performed is offered simply to call attention to the procedure. After the conjunctiva is cut from about the cornea each rectus muscle is caught with a catgut suture. The muscles are then severed from the globe and the eye removed. An incision is made either in the abdominal or gluteal region and a mass of fat excised and forced into the cavity of Tenon's capsule. The muscles are then tied across the fat mass and the conjunctiva closed over all by the usual purse-string suture. The skin wound is sutured and put under pressure bandage. In the two cases operated upon there was scarcely more reaction than usual and, save for the premature giving way of the conjunctival suture in one, which left a small area of fat exposed for a week, the healing was perfect; after three and a half months the globe feels and moves like an eyeball and the artificial shell has a very considerable motility and is not sunken. That the fat will heal in under strict asepsis seems likely. That it will remain without shrinking after once becoming organized is also probable, although if it does shrink a certain amount of fibrous tissue must be left as a stump. As pointed out by Bartels the operation, if it should prove practicable, would be of the greatest value, especially in children, where nondevelopment of the whole side of the face follows enucleation.

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# A NEW DEVICE FOR SUSPENDING THE GIANT MAGNET.

By S. J. TORNEY, M. D.,

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(Illustrated.)

Not being satisfied with the methods in vogue for suspending the giant magnet, I set about devising an improvement.

The device finally evolved is shown in the following cut. A dental engine bracket is securely fastened to the wall or window casing of the operating room.

No. 1 shows the foot rheostat with cord extending and attached



to switch No. 7. No. 3, counterweight. No. 4, the suspension and conducting cable passing over the pulleys, one end continuing and attached to switch No. 7; the other passes around an eyelet, No. 5, into which is placed the hook supporting the magnet. The cable

continues on and is then attached to the two binding posts in the rear of the magnet proper. No. 6 shows indistinctly a vulcanized rubber shield covering the heretofore exposed posts. These posts are a constant source of danger to the operator—should the hand come in contact with both posts at the same time a terrific burn and shock to the operator would be the result.

For this improvement I am indebted to F. J. Geoghegan, D. D. S., who modeled and made the shield. No. 2, cord conducting current to switch No. 1. The arrow opposite marks the cut out switch.

This device then is simple in construction, rendering the magnet easy of manipulation and rapid of adjustment. It also economizes space by allowing the magnet to be rotated back to the wall when not in use.

209 ALASKA BUILDING.

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## ORBITAL FIBROMA, WITH UNUSUAL CLINICAL MANIFESTATIONS.

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PHILADELPHIA.

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[Illustrated.]

In March of the present year the writer had referred to him, as ophthalmic consultant to the American Oncologic Hospital a case of unusual interest which had been studied at some period since the development of the symptom-complex by several ophthalmologists. The patient was a perfect example of the migratory type that quaffs from many clinical fountains the bitter-sweet of manifold advice.

After I had completed my study of the case, and had performed the operation in my judgment indicated, I concluded that it would greatly add to the interest of its published history if the results of the examinations of Drs. deSchweinitz, Posey, and Harlan, to whose hospital clinics at various times he had applied for treatment, could be introduced at this point, since their reports were based upon a much earlier study of the case than my own.

In May, 1903, about one year after the development of his symptoms in the left eye, he consulted Dr. deSchweinitz at the eye

clinic of the University of Pennsylvania, at which time vision in the R. E. was 6/5; accommodation, 50m.; p. p. 10cm. L. E. 6/12; accommodation 50m. p. p. 15cm. At this time patient thought bulging of left eye was stationary, but complained of morning closure of left nostril. No enlargement of the thyroid, no tumor, and no rapid pulse were present. The eye was pushed forward, and by straining effort the proptosis was increased. No diplopia was present in any part of the field. The eyeball attained its prominence in two weeks and has so remained for a year. Vision thought to be worse in the morning. Marked optic neuritis, swelling equals plus 3d. No other fundus lesions. Fields normal. R. E. media clear, no neuritis, but decided enlargement of veins. Disc red, fundus otherwise normal.

About one year later, May 16, 1904, he again applied at the university clinic, at which time there was no change in the symptoms other than the falling of the vision of L. E. to 6/15. While attending the clinic he was placed on iodid of potassium, which was gradually increased until he was taking 100 grains three times a day, with entirely negative results upon the proptosis. At this period it was thought possible that an orbital growth was present.

On September 2, 1907, he applied for treatment at the Wills Eye Hospital, in the service of Dr. Posey. The complaint was the prominence of the eyeball. Neither pain nor headache was present. Examination at that time by Dr. Posey showed moderate proptosis of the left eye. Motion of the eyeball were good in all directions. No diplopia could be elicited and there were no ocular signs of Graves' disease. Dr. Posey adds the following note: "I find no record of the examination of the fundus or of vision, which was due to the fact that he eloped before entering the dark room. It was my impression at the time that the man was suffering from sinusitis, as in the recital of his history he also complained of the left side of his nose having been blocked for a long time past."

The next record of an examination I have traced to the Pennsylvania Hospital in February, 1908, about one year before he came under my care, in the service of Dr. Harlan, where he was admitted for operation, but remained only for a few hours. The following notes were made just previous to admission: Vision R. E. equals 5/15, with glass 15/15; L. E. 20/100, with glass, 15/200. Patient stated that during the year previous to this examination exophthal-

mos had not increased. There was no change in health and no specific history. R. E., external appearance and fundus normal; L. E. eye exophthalmic nearly to the point of dislocation. All tissues to the nasal side dark in color. A growth not attached above or below can be felt at the nasal side of orbit. Pupil same size as other and responds normally to stimulation. Ophthalmoscopic examination, complete choked disc, without other changes. Prominent vessels, plus 5 d. Dr. Harlan has kindly enclosed me a copy of the fields made by Dr. C. P. Franklin which are reproduced.

The patient was also examined by three other surgeons at a later date, two of whom regarded the condition as due to orbital sarcoma, and the third to sinusitis.

The following clinical story was elicited at my examination. There is nothing of moment in the family history. The patient is thirty years of age; height, 5 feet 8 inches; weight 145 pounds; well built and apparently well nourished. Kidneys were normal; no metastatic enlargement could be determined. Pulse was slow, volume fair, an occasional intermission was noted. No valvular lesion was present. The thyroid was not involved.

A distinct choreic tendency was present, which evidenced itself by a sudden movement of the head from side to side. This occurred many times each day, and has almost subsided since operation.

A mental symptom which occasioned considerable anxiety was a disposition to suddenly begin to count from one to ten or beyond. This was done a number of times each day without any relevancy whatever to the subject of conversation. This has also almost entirely disappeared.

He was hit on the temple with a brick when a boy, resulting in a black eye. A small scar one-quarter inch long is present just back of the orbital margin.

At twenty-three years of age the left eye was normal both as regards vision and position. Between six and one-half and seven years ago the eye evidenced a beginning proptosis, which has gradually increased to its present proportions, but which he thinks has remained quiescent for some months. This opinion, however, was not shared by other members of the family, who believe, on the contrary, that the exophthalmos has been progressive. The patient states that the use of liquors will at once induce a markedly blood shot condition.

The pronounced exophthalmos, which was down and out, had carried the most prominent part of the eyeball to a point about 15mm. in advance of the fellow-eye. The maximum effort to close the lids resulted in the exposure of the caruncle and a horizontal area of conjunctiva seen between the lid fissure at its inner third. The structures of the upper lid gave the impression of attenuation from the effort which was made to cover the eyeball.

The veins of the eyeball were intensely engorged, and near the inner canthus the area of exposure was characterized by a moderate conjunctival hypertrophy, the veins at that point being distinguished by an intense distention and varicosity. The caruncle was greatly swollen, extending 10mm. in its greatest diameter.

When the eyes are directed forward the lid fissure measured 16mm., as compared with 6mm. on the right side.

Just within the upper and inner orbital margin could be partly outlined a semi-hard mass, apparently not attached, which could be traced from the region in front of the os planum to about the middle of the upper orbital rim, from which region the greatest pressure was evidently exerted. Pulsation and bruit were not present.

The vision of the left eye equalled fingers at one meter. Under lateral illumination pupil enlarged from 3 to 5 mm. In accommodation almost immobile. Media were clear. The nerve showed a well marked papillo-edema, the most prominent vessels of the disc measuring 6 to 6.50d. The central veins emerged in strong horseshoe bends. Those running into the lower and outer periphery were most prominent by one diopter than those upon the disc. No hemorrhages nor splotches were present. Sclera stiff. Had been wearing plus 1.50, plus .75 c. axis 180.

The eye was by no means immobile, as the following rotations attest: Upward rotation, 50 deg; downward rotation, 15 deg; inward rotation, 15 deg; outward rotation, 60 deg; up and in rotation, 20 deg; down and out rotation, 30 deg; down and in rotation, 20 deg. This was regarded as a distinctly favorable symptom.

Right eye vision equals 6/5 plus. Iris reacted promptly to light and accommodation. Media clear, nerve vertically ovoid, refraction low H. and H. A. S. the prominent vessels being blurred by plus 1, central excavation shelved out. An irregular choroidal

crescent bounded the outer disc margin. Moderate retinal striation present, with slight obscuration of the nasal edges of the disc. Veins full and dark. Fundus abnormally red, but no gross changes were evident.

Nasal examinations revealed a deflection of the nasal septum upward and to the left, partly obscuring the middle turbinal and pressing upon it. No other intranasal abnormality was visible.

The illumination of the frontal, ethmoid and maxillary sinuses was done with assistance of Dr. Samuel D. Risley. Those on the right side showed no abnormality. The illumination of the left maxillary and ethmoidal sinuses was negative, but pressure upon the os planum with the finger placed within the orbit over the position of the anterior ethmoidal cells, revealed an extremely thin and probably eroded plate giving a distinct crackling sensation upon pressure. The left frontal sinus was absolutely dark, strikingly in contrast to that on the other side. Dr. Risley felt it not probable that the exophthalmos was due to ethmoidal and frontal sinus disease.

Dr. Wm. S. Newcomet, director of the x-ray department, kindly made three plates, an anterior-posterior, a left and a right lateral, and gives the following brief report of his findings. The anterior-posterior plate shows that the left orbit is distinctly larger than the right orbit. Frontal sinuses are clearly seen; the right sinus somewhat clearer than the left. Antrums on both sides are about the same size and gave no evidence of disease. The eyeballs can be seen in both lateral plates. The left lateral plate shows that the orbit on the left side is greatly enlarged posteriorly; the eyeball is pushed forward from its natural position; the bony structure otherwise appears normal. The right lateral plate shows nothing abnormal.

Had it been possible to make an absolutely positive diagnosis, the operative procedure would naturally have promptly suggested itself. Exophthalmos had been variously ascribed by the surgeons who examined the case to the presence of disease of the accessory sinuses (possible mucocoele) to an orbital sarcoma, or to a benign neoplasm, of which fibroma, the growth found is a type.

Syphilis at the time of my examination could with comparative ease be eliminated, apart from the patient's denial, by reason of the tardy forward extension of the eye and by reason of



the fact that large dosage of iodid of potassium had been previously given with negative results. The administration of the drug had extended over a period of several months and had reached 300 grains a day. The skiagraph by Dr. Newcomet served to eliminate any bony growth. Aneurysm should have been indicated by pulsation or bruit, neither of which was present.

Pressure did not induce recession, but, from the circumstance that the right frontal sinuses illuminated perfectly and the left was absolutely dark; that crepitation could be distinctly elicited over the os planum of the affected side; that the evident swelling was most marked up and in giving an outward and downward ocular displacement, and that the early suggestion of exostosis in sinus disease later is apt to give way to a parchment like feeling—these considerations strongly suggested an investigation of the frontal and ethmoidal cavities as aids in establishing a diagnosis, before proceeding to the more radical enucleation of the eye and growth.

Sarcoma was regarded as a possibility. The family history, as pointing to this diagnosis, was negative. No secondary glandular involvement was present, and there was only a history of a slight personal traumatism far removed in point of time from the development of the proptosis.

The freedom of the ocular excursions made me personally somewhat doubtful of this diagnosis, as the orbital sarcomata that I have studied, as a rule, induced comparative fixation of the globe. Orbital disease of this type is usually of a more rapid growth, although I am aware that the case of Leenheer, of endothelioma of ten years' standing as well as others in medical literature, modifies the value of this diagnostic aid.

Had an exploratory incision indicated sarcomatous involvement of the accessory nasal cavities, I proposed to immediately desist from further operative interference by reason of the well grounded belief that such surgery is meddlesome and invariably hastens a rapid extension. On the other hand, if a malignant neoplasm in this locality was encapsulated, I would still advise its removal, upon the ground, not yet disproved, that such disease is primarily local. If sessile and having bony attachment, as complete operative removal as possible, is indicated to be followed by the application of the so-called Ionic method, or better known as mercury zinc cataphoresis, by reason of its success in other regions.

The patient was, therefore, told that an absolutely certain diagnosis previous to operation could not be made. That the indications pointed in the direction of a benign condition probably an orbital tumor. That while the result of sinus illumination could not be regarded as final, they warranted exploratory incision as the first stage of the operation to be followed by further interference as indicated by the findings.

Operation at Oncologic Hospital, Wednesday afternoon, March 24, 1909, under ether, with the courteous assistance of Drs. Joseph S. Gibb and George Friebis.

In order to investigate the relation that the accessory nasal sinuses might bear to the condition, the skin of the left side of the forehead, including the eyebrow, was well drawn up and a curved incision to the bone, just within the orbital margin, was begun at its inner third and carried a trifle below the anterior palpebral ligament. In order to protect the eye during the portion of the operation, the upper and lower lids were brought together with a stitch through the lid borders.

The Killian incision was purposely modified, since there was no intention of investigating the frontal sinuses through the regular route, but rather to approach it from the orbit. After separating the soft tissues, the upper inner orbital roof, corresponding to the location of the normal floor of the fronted sinus, was carefully explored, and showed neither erosion nor the evidence of escape of any frontal secretion.

The orbital plate of the ethmoid was next bared and found to be extremely thin, crackling under the slightest pressure, to this extent confirming the tactile impression gotten during my initial examination, when the finger was pressed into the inner bony orbital wall in this region.

No opening was discovered into the ethmoid, but the friable character of the separating wall suggested an exploratory opening into and gentle curetting of the anterior ethmoidal cells, which was done. The sinus was carefully probed, but no secretion from the ethmoid was found. In the absence of any discoverable grumous secretion pointing to the sphenoid, it was assumed that the accessory nasal sinuses bore no etiological relation to the symptom-complex.

By carefully inserting the finger well back into the orbit at this stage of the operation, a moderately hard growth running

toward the orbital apex could be partly outlined. It did not spring from the inner wall and was not sessile. Its development, however, was distinctly more pronounced toward the inner and upper orbital quadrant and as was afterward proven was located in part within the muscle cone.

It was considered that its removal through this incision without the enucleation of the eye would induce too great a degree of traumatism and a Kronlein operation was negatived because of the fact that the incision beneath the orbital arch was necessary as the primary step in the operation. The Kronlein, in this instance, was considered unwise also because of the possibility of malignancy and the practical certainty that its attack by the latter method would have necessitated its removal piecemeal with the attendant risk of recurrence. The encapsulation of the growth and the possibility of non-malignancy rendered orbital evisceration unnecessary. There was no involvement of the bone of periosteum.

The eye was enucleated without accident. It was now possible to outline a growth the size of an average walnut, slightly irregular and more prominent up and in. With the finger the tumor was separated from its connective tissue bed, the only incision being made with stout scissors through some connective tissue strands near the orbital apex. It was encapsulated. The hemorrhage was not excessive. No other nodules were discovered.

The skin-wound in the sinus exploratory incision was closed with silk sutures. The conjunctiva was likewise stitched and the wound healed promptly, the scarring being extremely slight, its position partly under the brow emphasizing a not unimportant point in the technique suggested by Risley and others.

**PATHOLOGICAL REPORT** (by Dr. J. M. Swan, director of the Pathological Laboratory of the American Oncologic Hospital): A tumor from the orbit spherical in shape, measuring one inch by one and one-half inches in diameter, surrounded with a distinct thin fibrous capsule. On bisecting the tumor the interior of it was found to contain an irregular shaped mass of blackish material, resembling a blood clot. Microscopic examination shows that the capsule is composed of a recticulum of fibrous tissue fairly rich in blood vessels, which are filled with partly clotted blood.

The bulk of the tumor is composed of fibrous tissue fairly rich in cells of the fibroblast type. The tumor contains numerous blood vessels with indistinct endothelial lining, containing partly clotted

blood. Some of them are quite full, others only partly filled with clot. In one part of the growth these vessels are quite numerous, and some of them were almost empty. I do not consider the tumor to be malignant, but regard it as an orbital fibroma."

In order that an accurate record could be preserved of the microscopic changes induced by the long continued pressure of the growth upon the eyeball, I requested Dr. C. M. Hosmer of the pathological laboratory of the University of Pennsylvania to section the ball. His report is herewith appended:

"Eye received April 12, 1909; has lain for nineteen days in a 5 per cent formalin. In the post equatorial segment and nasal half, and especially inferior mesial quadrant, there is a decided flattening. Measurements: A. P., 23 mm.; V., 25 mm.; h. 24.5; Cornea, h. 10.5 m.; V., 12 mm.; Pupil, 4.5 m.

"Aside from the flattening noted above, and the nerve exit being pushed slightly temporalward and slightly above the horizontal meridian, the eye appears normal. Measurements from points on horizontal line 6 mm. below the posterior pole and equidistant nasally and temporally from a perpendicular dropped from the posterior pole, to points on the 18 mm. and 19.5 mm., respectively. Verticose veins may be slightly more prominent than usually seen. The upper nasal is double. The sections cut from lower half of globe show:

"1. A moderate papillo-edema in the stage of regression with early formation of connective tissue at disc margins.

"2. Incomplete detachment of retina, with edema and partial atrophy of that membrane. Detachment, in part, is due to sub-retinal transudate, which is seen coagulated about the swollen and atrophied rods and cones. The ganglion cell layers shows strophy and infiltration with moderate number of leucocytes. The edema is seen mainly in the nerve fiber and reticular layers.

"3. Apparently early atrophy of the optic nerve.

"4. Deposit of coagulate about the optic nerve fibers anterior to the lamina cribrosa.

"5. Coagulate (fine) lining the posterior surface of the cornea and occupying the anterior chamber.

"6. Shallowing of the anterior chamber.

"7. Narrow anterior peripheral synechia and evidence of agglutination of the pupillary margin of the iris to the anterior lens capsule.

"8. Questionable early supping of the lamina cribrosa."

The photographs which so well show the exophthalmos at the time the patient came under my care were kindly taken by Dr. C. B. Longnecker of the Oncologic Hospital staff.

NOTE.—In an interesting discussion as to operative methods in attacking orbital growths, which followed the reading of the above paper, the writer gave it as his opinion that since the vision of O. S. was practically nil, and the location of the growth was in the muscle cone, it was felt that the amount of traumatism which would have probably followed its removal through an enlarged incision beneath the orbital arch, without enucleation of the eye, was scarcely warranted. He further added that the removal of the growth by osteoplastic resection of the outer orbital wall the so-called Krönlein method was not indicated because of the necessity of a primary incision in the modified Killian position, this being a favorable method to utilize when possible, and secondly because of the possibility of malignancy, the writer feeling that the likelihood of having to remove the growth piecemeal by the Krönlein technique would have been assuming an unnecessary risk of recurrence.



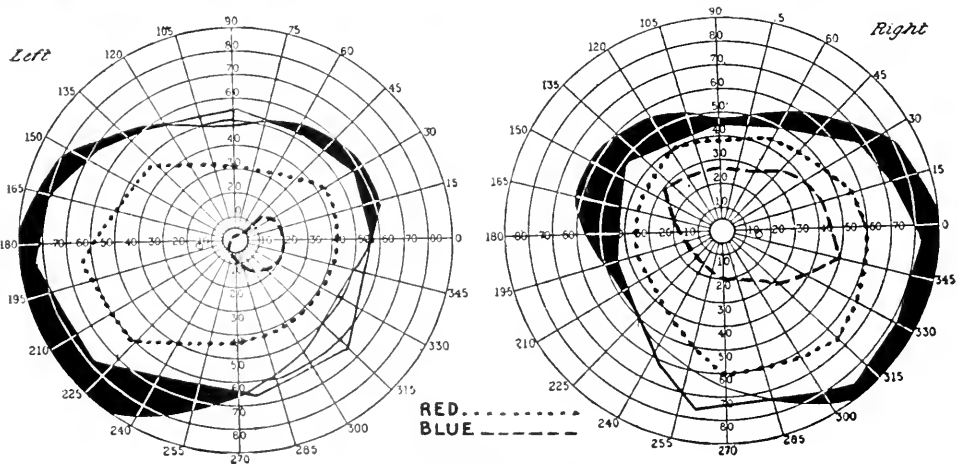
Orbital Fibroma May, 1904.

Could we have been assured of its benign structure then either method would have been fraught with a minimum of risk.

2014 CHESTNUT STREET, PHILADELPHIA, PA.



March, 1909.



Visual Fields March, 1909.

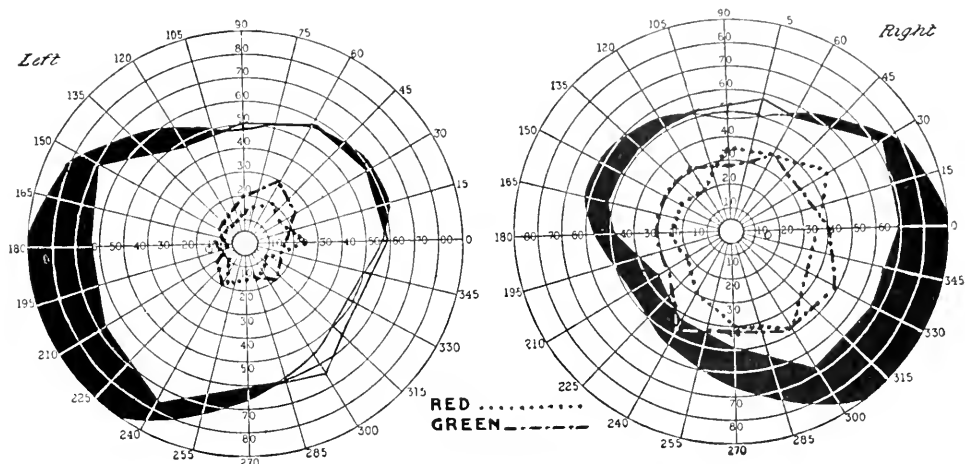
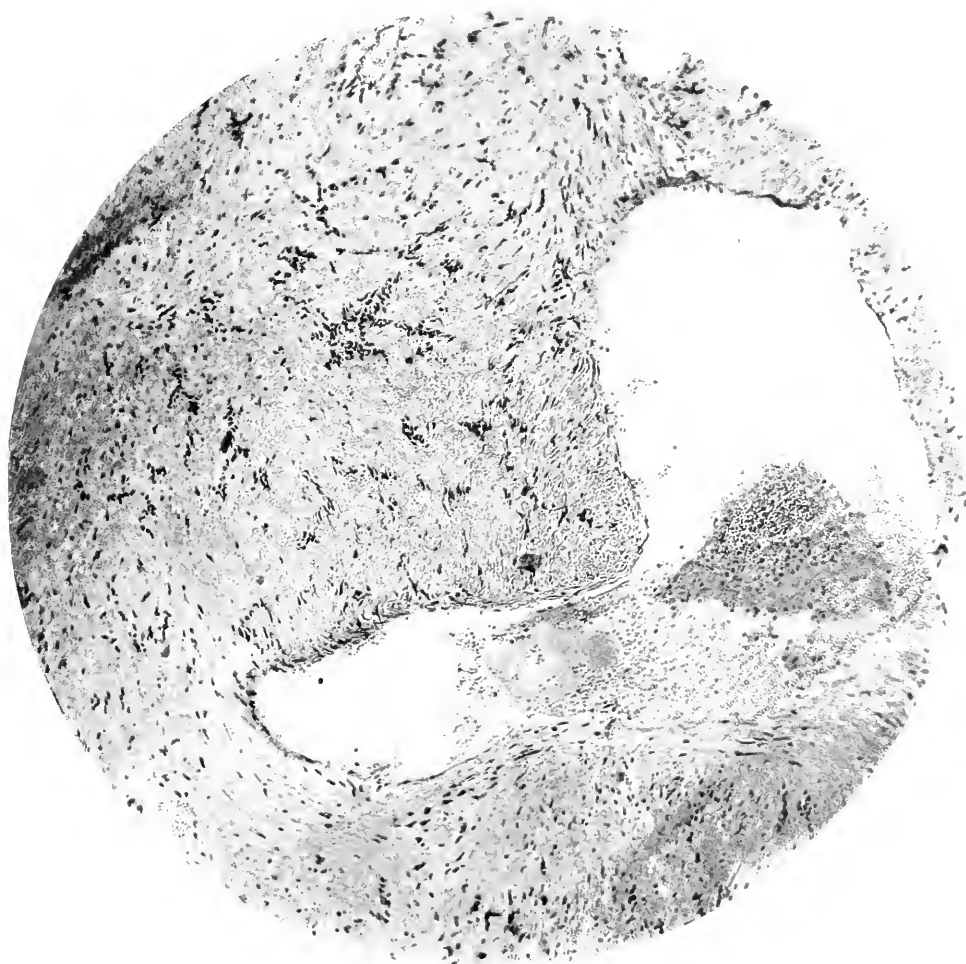


Fig. 1. Visual Fields Feb. 19, 1908



Photograph of Section of Orbital Fibroma Magnification x 125

## THE USE OF A MASS OF FATTY TISSUE AS A STUMP IN OCULAR PROTHESIS.

By A. E. IBERSHOFF, M. D.,

CLEVELAND, OHIO.

Whenever a prothesis is to be worn after enucleation of the eyeball the production of a healthy, prominent and freely movable stump becomes a matter of prime importance. Many are the procedures that have from time to time been advocated with this end in view. Mules' operation of exenteration and its several modifications, in which glass and paraffine balls have been substituted for gold or silver spheres have, after prolonged trial, been abandoned by the best authorities and now merit little more than historic mention. Injections of paraffine have shared a similar fate, being frequently attended by sympathetic irritation and resulting still more frequently in the ultimate extrusion of the injected substance. Conservative operators, profiting by past experience, have in recent years contented themselves with the careful conservation of all available tissue and the suturing of the recti muscles in crucial form. By this means a fairly good stump can be procured with more or less limited motion. But the subsequent atrophy results in a retraction of the stump to such an extent that even a reform eye cannot be brought to occupy the plane of the normal eye and the best obtainable cosmetic effect leaves much to be desired. The very limited excursions of such a prothesis results in a conspicuous staring effect, thereby defeating in large measure the end so much desired.

In the implantation of the patient's own fat I believe we have a means of overcoming all of the objectionable features of previous procedure. Adipose tissue is a comparatively low grade of tissue and by reason of its relatively poor blood supply has not been considered adaptable for transplantation. Experience seems not only to disprove this assumption, but leads me to conclude that the premise on which it was based, viz: the rather limited blood supply necessary to maintain such tissue, is the very reason for its availability for the purpose under discussion.

The method I employ consists of the implantation of a mass of subcutaneous fat taken either from the patient's abdomen or gluteal region. Briefly the technique is as follows:



A circumcorneal conjunctival incision is made and the conjunctiva undermined in all directions. A catgut suture is passed through the tendon of each rectus before the latter is severed. These sutures are reflected out of the wound and the eyeball is then removed in the usual manner. In a previously prepared area on the abdomen or buttocks an incision is made about two inches long and a mass of fat about the size of a walnut carefully excised. The orbital hemorrhage having been controlled by pressure, the excised fat is placed into the capsule and the four sutures tied over it, uniting the recti muscles in crucial form. Tenon's capsule is then sutured with fine catgut and close stitches to prevent any pouting of the enclosed fatty tissue. Should any particles protrude they should be trimmed off. The conjunctiva is then sutured with silk and the usual dressing applied without pressure. The conjunctival sutures may be removed on the fifth or sixth day and a shell eye fitted about three weeks later.

Cases observed after the lapse of a year have shown no apparent decrease in the size of the stump, justifying the conclusion that the fat becomes organized. The advantages I claim for the operation are a more prominent stump and especially increased mobility of the prothesis.

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NEW QUEEN OF BELGIUM A PHYSICIAN.—The wife of the new king of Belgium is the daughter of the late Duke Karl Theodor, of Bavaria, whose death was recorded December 11. She always took great interest in her father's scientific work, and used to assist him in his eye clinic and hospital. She early announced her intention to study medicine, but it met with strenuous opposition on the part of all her relatives with the exception of her father. Under his encouragement she began to study medicine with him at the age of 16, and completed her course, obtaining her medical degree at Leipsic, not long before her marriage. She continued her medical studies in Brussels, and founded there the Albert-Elizabeth tuberculosis dispensary, which has been doing excellent service in prevention and cure of tuberculosis among the poor. Until her recent accession to the throne she was a daily visitor and took an active part in its work.—*Jour. A. M. A.*

## PSYCHOSES ASSOCIATED WITH OCULAR AFFECTIONS.\*

BY SAMUEL D. RISLEY, A. M., M. D., PHILADELPHIA.

It is not the design of the writer to discuss in this paper the interesting and extensive group of ocular neuroses presenting well marked focal symptoms or otherwise demonstrable intracranial lesions, as, for example, the numerous instances where a pathologic lesion has impaired or entirely closed the pathway from one or more of the special sense organs to the primary or secondary cortical centers, or where a cortical lesion has impaired or destroyed the power of perception or apperception.

The paper is confined to the study of a group of symptoms, not infrequently observed, associated with and apparently dependent upon abnormalities of a special sense end organ, which render the performance of its special function difficult. While the present study is confined to observed ocular associations it is probable that other special sense organs might, with some show of reason, be included. The history of a small group of illustrative patients will be related in each of whom the symptom complex included peculiar mental derangement. No attempt will be made to study the well known ocular hysteria, from which the patients under study seemed widely separated, nor the psychical features of surgical delirium which has been thoroughly set forth by your chairman, Dr. Posey, in another place ("The Eyes and Nervous System," Posey and Spiller).

In the course of experience the writer has met with a considerable group of patients, who, suffering from the usual phenomena of asthenopia consequent upon some defect of refraction or ocular imbalance have been afflicted also by peculiar mental disturbance which has added to their physical pain, the distress or alienation peculiar to the disordered mind. Attention was first directed to the possibilities in this field for observation by the following cases:

Case I. Mrs. X., age 32, was brought for consultation from an asylum for the insane in 1890. The general health was apparently good, but there was a history of nervous breakdowns in early life as a school girl. She suffered from more or less constant headache, aggravated or brought on by reading, and cul-

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\*Read before the Pennsylvania State Medical Society, October, 1909.  
Pennsylvania Medical Journal, February, 1910.

minating in violent exacerbations, the pain usually centering in the vertex. She was found to have a low degree of hypermetropic astigmatism with asymmetrical corneal meridians, a diminished range of accommodation for her age and marked retino-chorioidal irritation. Unfortunately my notes do not relate the character of her mental delusions. She had been in the asylum on different occasions for varying lengths of time, but her present incarceration had been for two years and she was classed among the incurably insane. In a short time after receiving her glasses, correcting the optical defects, not only her headaches but her mental delusions vanished and she returned to her home. For nineteen years this lady has been kept under observation, so that ample opportunity has been afforded to observe her peculiarities and elicit her history. A very early marriage had placed her, still a girl, in a luxurious home, and surrounded her by the evidences of culture and travel, the accumulation of three generations of her husband's family. This peaceful and delightful environment was soon converted into a pandemonium, out of which she was sent by suitable process to the asylum. After her return, as noted above, peace reigned for a number of years, but by degrees the blighting influence of an unstable nervous system once more gained control and the divorce courts closed the drama so far as this history is concerned, but to the present time there has been no return of the delusions which made the asylum for the insane her only safe home.

Case II. In 1896, Mr. Y, a university graduate, trained in the laboratory, and occupying the chair of chemistry in an educational institution, came for relief from long suffering, ocular disturbance for which he had been under the care of a number of eminent ophthalmologists at whose hands glasses had been prescribed and tenotomies of the ocular muscles performed, but without notable relief. He suffered very little pain in eyes or head, but was compelled to stand constantly at attention, "like a soldier on parade," he said, to avoid crossed diplopia. He was much distressed in mind, his perturbation growing out of his inability to grasp the meaning or sense of any passage he chanced to be reading. On many occasions he had obviously, to use his own phrase, "lost himself," i. e., had suffered attacks of *petit mal*, and was frequently the victim of hallucinations. He was, therefore, much perturbed lest he should lose his mental control. A study of his ocular condition revealed an absolute exophoria, slight hyperphoria and an

apparent simple myopic astigmatism for which he was wearing concave cylinders; with these  $V = 6/V$  in each eye. There was no abnormality in the fields of vision for form or color. There was the usual chorioidal disease, the concomitant of eye strain. Under the prolonged use of a mydriatic, the astigmatism proved to be hypermetropic instead of myopic and the chorioidal conditions improved. The internal rectus muscles were then advanced for the correction of the exophoria. The binocular balance was restored, entirely correcting the tendency to diplopia. The constant strain or tension before required to avoid double vision was removed. He could now rest, and with the repose came complete relief from fear as to the future of his mental state. He now suffered from headaches, and did so after prolonged near work for several years. As the ocular balance gradually became normal through adjustment of the scar tissue at the site of operation, his headache also disappeared. There has never been any return of the *petit mal* or of his hallucinations and no difficulty in reading, or in his mental grasp.

Case III. Miss Y, a school teacher, sister of Case II, came in 1902, complaining of insomnia, vertex pain, weak eyes and hallucinations. She saw "queer things," had "watered silk" scotomata and blurred vision, which, at times, lasted for two hours or more, but the attacks were not followed by headache. She did not think that she at any time saw only half of an object during the attacks or that she was blind on one side. In the office there was nothing abnormal in the fields of vision. Like her brother, she was mentally perturbed, not over the fear of loss of mental control, *per se*, but lest the loss of control should cause her to do some one physical injury. In her own phrase, she felt like hurting any one who chanced to be near during one of her attacks. She came, hoping her eyes might be at fault, as in her brother's case. She had hypermetropic astigmatism in each eye, a relative exophoria and  $21\frac{1}{2}^\circ$  of left hyperphoria. She received correcting glasses, including a prism for the left hyperphoria. The exophoria promptly disappeared under training with prisms. She has never had any return of the hallucinations, the insomnia disappeared but the "watered silk" or fortification scotomata returned at lengthening intervals until four years later she reported that she had not experienced one "for a long time."

It is of interest in the study of the two cases to note that the mother had a slight hypermetropia, but a higher hyperphoria than either of her children, so high, indeed, that she did not enjoy binocular vision, but she suffered neither from hallucinations or headache. It is important, however, to note that she was relieved from eye strain by the divergence of one eye, binocular vision being impossible because of the high hyperphoria. The father, who also had a high hyperphoria, but only a slight astigmatism, had been an epileptic "of the sporadic type."

Case IV. Miss A. G., aet 32. Came in 1892, with diagnosis of nervous exhaustion. She suffered from insomnia, and violent occipital headache. Her eye trouble began with severe pain in eyes while a school girl. Her father was editor and proprietor of **one** of the most widely quoted western newspapers of which the daughter was literary editor. She had a high hypermetropic astigmatism, higher on the right side. There was also esophoria and 4° left hyperphoria. The refraction error was carefully corrected by glasses and later the vertical imbalance removed by tenotomy. The glasses had afforded but little, if any, relief, but at her visit to the office, the morning following the tenotomy she seemed a changed or transformed personality. Her first remark was, "I never slept as I did last night, I rested for the first time in my life." The binocular balance had been completely restored. She then unburdened her mind of a pitiful story of her own mental dread of the future and unfolded a painful family history—one uncle a suicide, another in an asylum for the insane, a third, also the writer's patient, an eminent artist who had been driven from his easel by his painful eyes until the strain of work was relieved by the correction of anisometropia by suitable glasses. "Today," she said, "my dread and pain are gone, and all by a painless operation that required two minutes to perform."

It is to be observed that in each of this group of patients there was present not only an error of refraction in each eye, but a significant difference in the degree of error between the eyes, a condition which increases the difficulty of securing clear binocular vision. In addition to this noteworthy fact there was also an absolute muscular imbalance. That is to say, there was a faulty attachment of one or more of the recti muscles to the eye ball, which made it impossible for each of these patients to maintain single binocu-

lar vision except at the expense of constant muscular strain.

Examples of like import, were it necessary for the purpose of this discussion, could be multiplied. Enough have been given, however, to suggest many inquiries.

The ocular defects, present in each of these patients, are certainly among the most frequent causes, not only of ocular discomfort, but are the cause of a frequently occurring symptom complex, correctly designated as ocular neuroses.

There is another group already discussed in this symposium by Dr. de Schweinitz in which ocular symptoms of hysteria are displayed and are properly classed among the psychoses, but which rarely sustain any demonstrable primary relation to eye strain.

In the group of cases under discussion, however, hysteroid stigmata, if present at all, were very obscure. That there was a definite relation of cause and effect between the eye strain produced by the existing ocular anomalies and the existing mental derangement as shown by the clinical histories seems to have been demonstrated by the disappearance of the latter *para-passu* with the correction of the former.

Accepting this proposition as true, one cannot avoid the inquiry, having in mind the great frequency of ocular defects, and the associated asthenopia, why are the examples of mental disturbance, as set forth in the histories here recorded, relatively so rare?

In this connection attention is directed to what is regarded as an important fact in the clinical records, viz., that either the individual or family history in each patient pointed quite definitely to some inherent instability, to some physiologic vice, congenital or acquired, which rendered the nervous or mental equipoise unstable and therefore readily upset. The writer is painfully conscious of the vagueness, the unsatisfying quality of this proposition, for it forces upon one the inquiry: How can eye strain, primarily a muscular phenomenon, produce the psychologic symptom complex here recorded?

In the present state of our knowledge it is probably not possible to give a satisfactory answer to this inquiry. Any adequate discussion would lead us too far afield for this paper, since it involves an excursion into one of the most difficult but at the same

time most fascinating chapters in mental physiology. Why should constant tension upon a group of muscles innervated by the oculomotor disturb or confuse what Dr. Mills has designated the "concrete" or stereognostic mental concept formed in the higher visual areas?

How may we account for these hallucinations, this fear of impending evil, the confused, distorted or deranged memory concepts?

The suggestion is made that exhaustion, irritation or it may be a variation in the blood supply of the cerebral cortex in and near the primary or lower visual areas would be sufficient cause for the symptom complex as noted, since it is conceivable that either a congestion or an anaemia of the primary perception centers would modify the distribution of the visual perceptions to the higher visual areas. Having in view the still uncertain state of our knowledge regarding the oculomotor nucleus, the relation of the oculomotor fibers to the optic nerve, and its ramifications and distribution: and still more the vagueness of our understanding regarding the influence of the vasomotor nerves, as supplied to it through the ciliary ganglion, over the dilatation and constriction of the blood vessels, one does not feel disposed to indulge in dogmatic statement.

Certain it is, that when the tension upon the eyes was removed and rest secured, the symptoms disappeared.

## REPORT OF TWO UNUSUAL FORMS OF CON- GENITAL CATARACTS.\*

BY DR. WM. CAMPBELL POSEY,

PHILADELPHIA, PA.

### Malformed Lenses and Irides in a Micophthalmic Subject.

Case I. L. H., an albino, was brought to me in March, 1907, when 4 years of age, on account of poor sight. The child was of German parentage, and both father and mother as well as six other living children were all said to possess good sight, nor was there any history of ocular defect in the family. The mother asserted that the eyes had never been inflamed and that the child had always had good health. There had been no convulsions. On testing vision, it was ascertained that the child could pick up pieces of white paper 5 mm. in size from the floor with either eye without difficulty, but on account of diffidence her distant vision could not be ascertained.

Examination showed both eyes to be markedly microphthalmic. The anterior chambers were extremely shallow and the iris in each eye was arched forward, its base being indrawn and on a decidedly lower plane than the pupillary portion. Under high magnifying power, each iris appeared rudimentary, the minor circle being wanting, while the major was fairly well developed. The pupils were extremely small, being but 2 mm. in size, and their size was but little influenced by exposure to different degrees of illumination. Both irides reacted, however, to light stimuli. Each pupil emitted a gray reflex. It was noted that the iris in both eyes appeared more bulging on the nasal than the temporal side, as though the lens mass behind was dislocated nasally. Atropine was instilled, when it was possible by the slight dilatation which followed to ascertain that the anterior capsule of the lens was slightly hazed, and that there appeared to be a denser zone of opacity more posteriorly.

By reason of the lack of pigment in the iris, the shallow chamber and the arching forward of the iris, both eyes closely resembled those of a young rabbit.

Thinking that the opacity of the lens might be only central and that the periphery might be clear, an iridectomy was thought of for visual purposes, and an attempt at this operation was accord-

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\*Read before the Section on Ophthalmology of the College of Physicians of Philadelphia, December 16, 1909.



ingly made upon the right eye in the upper nasal quadrant. After the anterior chamber had been opened by the keratome, however, and the iris grasped with the forceps, it was found that the membrane appeared to be adherent to the sublying capsule, and as either clear lens matter or vitreous began to present, the attempt at iridectomy was abandoned and the eye bandaged. Unfortunately, a few days after this the patient was taken ill with measles and was transferred from the Children's Hospital, to which she had been admitted for the operation, to the Municipal Hospital, where the febrile disturbance from which she suffered and the indifferent treatment which the eye received, permitted the development of a uveitis, which persisted for nearly six months after the operation. During the 16 months which followed, the operated eye has remained quiescent, but the cornea is densely hazed in the pupillary area and the iris is adherent anteriorly and the eye is blind.

The ocular complications in this case are probably instances of lack in development in some of the structures of the anterior segment, as a consequence of microphthalmus, the iris in each eye being more or less rudimentary. In all probability there has been some obstruction offered to the disappearance of the vascular tunic of the lens and perhaps of the hyaloid artery as well. I consider the degree of vision which the child possesses under such adverse conditions remarkable, and in view of the disastrous results which followed operation upon the one eye I am strongly disinclined to advise any form of operative procedure upon its fellow.

### **Total Congenital Cataract.**

Case II. In October of this year I was asked to see a baby a few days old who appeared to be quite blind as a consequence of total opacification of both lenses. The parents were strong and vigorous, and their only other child was well and with good vision. There was no history of cataract in the family. Upon examination both eyes were found to be of normal size and presented no evidence of disturbance other than the complete opacification of both lenses. The pupils were 3 mm. in diameter and the irides reacted promptly to light stimuli. (This test was made by the father of the child, who was a physician, as both pupils had been dilated with atropine prior to my seeing the child, in order to expedite matters for me.) With the dilated pupils, both lenses were seen to be uni-

formly and totally opaque, of a yellowish white color, with here and there splotches of apparently denser white areas.

Upon account of the apparent perfect development of the eyes in other respects, and of the prompt behavior of the pupils to light, the parents were told that in all probability a later needling would give the child sight, but the performance of this operation was not advised until the expiration of a year. At the time of examination, the child appeared in perfect health, and Dr. B. C. Hirst, who had been in charge of the confinement, assured the writer that as far as he was aware that this was the case. A week later, however, the child died suddenly in convulsions, which Dr. James McKee, the pediatricist in attendance, thought was attributable to a cerebral hemorrhage. No autopsy was made.

De Schweinitz is authority for the statement that in the tables of De Wecker, among 40,000 cases of various forms of eye disease, 36 total congenital cataracts were enumerated. Hess, on the other hand, thinks that this form of cataract is only somewhat rarer than congenital nuclear cataract. I can not without looking up my records quote my own statistics, but I certainly have not met with a total opacification of the lens nearly so often as either nuclear or zonular opacities. Dr. B. C. Hirst, who has assisted at the births of a very large number of children, says that the case which has been reported is the only instance of the kind that he has seen.

According to Hess, congenital cataract is closely related not only with congenital nuclear cataract, but also to zonular cataract, the total opacification of the lens representing an advanced stage of the two other varieties. Becker, on the other hand, considered congenital total cataract to be "constitutional," while zonular cataracts were included among mal-formed lenses. Those who are interested in the treatment of congenital cataract are referred to the admirable conclusions embodied in Mr. E. T. Collins' paper on "Congenital Cataract" before the American Medical Association in 1908.

## COLORADO OPHTHALMOLOGICAL SOCIETY.

MEETING OF NOVEMBER 20, 1909, IN DENVER.

DR. DAVID A. STRICKLER, PRESIDING.

### **Hyalitis.**

Dr. W. C. Bane presented a woman of thirty, who had first consulted him two years before on account of pain above the right eye: ciliary tenderness and vision reduced to 5/30. There was decemetitis, the pupil reacted normally, although the iris was discolored by inflammatory changes, and there were floating vitreous opacities. Thirty minims of the syrup of iodide of iron t. i. c. and 10 per cent dionin daily for a few weeks had been followed by clearing of the cornea and subsidence of the iritic and ciliary disturbance. On November 4, 1909, the patient returned with marked opacity of the vitreous of the right eye, but no other structures previously involved seemed now to be affected. There was no pain, and t. v. = 3/300. In the absence of evidence of syphilitic infection, Dr. Bane considered the etiology obscure.

### DISCUSSION.

Dr. Neepier noted undue whiteness of the disk and advised examination of the nasal accessory cavities.

Dr. Jackson located the opacity in the anterior part of the vitreous, and thought it accounted for the low vision. He doubted if the disk were pale.

Dr. Dickson questioned the specific causation, while Dr. Friedman believed syphilis to be the etiologic factor.

Mr. Libby referred to a case of double hyalitis which he had seen closely follow influenza. Recovery resulted after the use of calomel, iodides and dionin for several months. Nasal examination was negative.

### **Congenital Pigmentation.**

Dr. D. H. Coover showed a white woman of sixty who had "always had a dark eye," thus referring to her strikingly noticeable negroid sclerotics. In the right eye two-thirds of the iris was deeply pigmented, one-third less so; the fundus was unusually pigmented, and the vision only 2/200. The left eye showed vision of 6/0, and a visual field contracted for green and blue, less so for white. "Rainbow circles" further suggested glaucoma, but the tension and nerve head were normal. The case was shown especially because of the pigmentation.

## DISCUSSION.

Dr. Jackson had never seen so much pigmentation of the sclerotic in a white person, and said that it was usual to see patches of pigment on the disk, rather than the diffuse pigmentation which Dr. Coover's case showed.

Dr. Dickson had noted pigmented pinguecula in negroes.

**Ectropion.**

Dr. Coover also presented an elderly man suffering from ectropion of both lower lids. Ziegler's operation had been done with benefit to each lid. The right lid had received five punctures with the cautery point and the left two punctures in four weeks.

## DISCUSSION.

Dr. Libby reported a case he had lately observed in which the ectropion had been caused by a large neglected chalazion on the conjunctival side of the lower lid, at its center.

**Glaucoma Secondary to Uveitis.**

Dr. Jackson showed a man aged 64 years, whose left eye had been removed after prolonged inflammation. The right eye became inflamed and painful three months since. Vision reduced to counting fingers at one foot. It presented an old pterygium extending 4 mm. on the cornea and five vessels entered the cornea 2 or 3 mm. above and below. The anterior chamber was very shallow, the whole iris and lens being pushed forward, but no part of the iris in contact with the cornea. Pupil, 3 mm. in diameter, irregular, excluded, and almost occluded. Transillumination was good in all directions. When first seen the tension of the eyeball was plus 1; but it varied, now being about normal. The patient refused any operation unless improvement of vision was certainly promised. Suggestions as to treatment were asked for.

## DISCUSSION.

Dr. Neeper suggested subconjunctival injections of mild iodide of potassium, solution, in the hope of absorbing the pupillary exudate.

Drs. Boyd and Libby advised iridectomy as the operation of choice. Dr. Jackson concurred in this opinion.

**Herpes Zoster Ophthalmicus.**

Dr. Coover reported a case showing first a red, watery eye. A bleb had soon appeared, covering the temporal eighth of the cornea

and showing infiltration more marked at the pupillary margin of the bleb. The cornea was anesthetic, and there was plastic iritis, without pain. Atropin was used locally. A general examination revealed carcinoma of the vagina and bladder.

#### DISCUSSION.

Dr. Jackson mentioned a case of herpes of the forehead, the eyelids being closed by swelling, but the eyes showing no external inflammation. The hyperopia was diminished 1 D. and the astigmatism was lessened, indicating involvement of the ciliary body. He believed this disease to be epidemic at times; although he had seen but six or eight fresh cases, and about four old cases.

Dr. Neeper thought he could readily recall fifty cases seen in ten years, the youngest being 23 months. He had seen the blebs on, but not in, the nose. Ten per cent ichthyol ointment gave him the best results, with the least scarring.

Dr. Magruder had seen a case in which the inferior branch of the nerve was involved. It resembled erysipelas, except that the border was not well defined. There was no fever and no pain. The attack subsided in forty-eight hours under the use of 10 per cent ichthyol ointment.

Dr. Bane spoke of five cases he had previously reported, all of which had been diagnosed as erysipelas.

#### **Copper Electrode for Trachoma.**

Dr. T. A. Dickson of Mobile, Ala., stated that he had treated twenty-five severe cases of long standing trachoma by use of the copper electrode, with far better results than he had formerly attained by other methods. In his first case he had given only one treatment, using a current of 15 milli amperes for about eight minutes, until a green deposit from the copper electrode was left on the conjunctival surface of the eyelid. The second eye was similarly treated seven months later. The corneas cleared and the vision became normal. Other cases gave very favorable results, the trachomatous granulations and scar tissue and the pannus yielding to this treatment, and the cornea clearing consequently. With greater experience in the use of the copper electrode, Dr. Dickson now employed a current of 3 to 5 or possibly 8 milliamperes, and used this treatment more frequently than formerly.

#### DISCUSSION.

the pannus had cleared entirely; in the other, nearly so. He also

mentioned the use of one-half per cent zinc or copper sulphate, by electrolysis.

Dr. Marbourg had seen two corneas clear, following the use of glycerole of copper, but conical cornea developed later.

Dr. Coover had treated over 100 cases of all types of trachoma sandpapering. Only three had returned for a second operation. He said that the secret of success lay in everting the upper lid so that the cul de sac was entirely exposed; everting with Darier's forceps, making one or two or even three turns, and removing small as well as large granulations. Even with a smooth tarsus, two or three patches of granulations may be found at the fornix; accounting for battling photophobia, lacrimation and pain.

Dr. Sisson said that if trachoma is caused by protozoa, eradication must come from thorough eversion of the lid, thus reaching each protozoon. He had found the protozoon of Greeff in one case in the epithelial cells near the cell nucleus.

#### **"Arcus Senilis."**

Dr. Jackson reported the case of a woman of thirty-three, with the appearance of a large arcus senilis extending entirely around each cornea, and possibly due to prolonged vernal conjunctivitis. She had suffered from inflammation of the eyes, worse every spring and summer, for fifteen years, until the last two years. Her lids were now normal.

#### **DISCUSSION.**

Dr. Marbourg had observed the same condition follow in the case of a boy affected by vernal conjunctivitis, with pericorneal involvement.

#### **High Frequency Current.**

Dr. Coover reported a woman with an unsightly puffiness under the eye and also ectropion, due to the injection of paraffin to take out wrinkles. The use of the high frequency current "to the limit" had been followed by almost complete disappearance of the paraffin.

#### **End Result of Ciliary Wound.**

Dr. Boyd reported that a few days after presenting his case of penetrating ciliary wound at the last meeting, the injured eye became congested, painful and seemed softer. He did a Mule's operation, using the conformer and gold ball. There were adhesions between the scleral scar and the capsule, and the ciliary processes were found to be torn loose. The lens was not discovered.

GEORGE F. LUBBY, Secretary.

## OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

An ordinary meeting of the Society was held at the Medical Society's rooms, Chandos Street, W., on Thursday, November 11th, 1909, Dr. G. A. Berry, President, in the chair.

Mr. Sydney Stephenson showed a

### **Case of Pigment on the Anterior Capsule of Each Lens,**

probably representing a rare type of persistent capsulo-pupillary membrane. The president agreed with Mr. Stephenson's views. Dr. Rayner D. Batten exhibited and demonstrated an instrument for the examination of the eye under water in the erect position, and showed its application as a means of treatment. In glaucoma, for instance after removing the instrument, the haze of the cornea disappeared. He had not had any untoward incidents with it. Mr. Dorrell showed a case of choroidal degeneration. Mr. W. M. Beaumont read a paper on Oxycephaly, illustrated by a number of lantern slides. He did not agree with Patry in considering that the term syndrome should be applied to the association of Oxycephaly with optic neuritis or atrophy, as the nerve involvement was a secondary result which might or might not follow. Very considerable interest had been taken in the disease in recent years since the articles by de Michel and Virchow. A number of cases had been recorded in the United Kingdom, but he thought that the credit of first pointing out the clinical symptoms of Oxycephaly was due to Wm. Mackenzie of Glasgow. His description had strangely failed to attract the attention which it deserved. This keen observer had noted the shallowness of the orbits and the consequent exophthalmos; the vertical position of the roof of the orbits, the extreme height of the head and the blindness.

Mr. Beaumont drew attention to the excess of males over females: in 14 cases recorded in recent British literature there were 5 females. In Patry's list, drawn from French and German sources, there were 7 females in 64 cases. The author disagreed with Dorfmann who advocated trephining to prevent optic atrophy, because he considered that the optic neuritis and atrophy were not due to an increase of the intracranial pressure, but rather were the result of direct injury by bony distortion. Patry had stated that Sir Walter Scott and others had suffered from a slight degree of this disease. If this were true it is possible that cases of arrested oxycephaly might be overlooked, and he threw out the suggestion that possibly sometimes so-called idiopathic optic atrophy might be due to a fruste form of oxycephaly.

Mr. Bishop Harman said he had met with 6 cases in the London County Council Blind Schools, and had found the author's statement true, that they were not, as a rule, mentally defective. Mr. Sydney Stephenson recalled a case which was exhibited by Dr. James Taylor before the Society for the Study of Diseases in Children, which had occipital meningocele and optic atrophy. Mr. Bishop Harman read a paper on the measurement of the desire for Binocular Vision by means of the Diaphragm test. He said individuals showed variation in the sensibility of their cerebral functions. Color and light, sense, smell, taste, and hearing all varied and the muscle sense that maintained body balance no less. There were extreme of mental defect and striking endowment, but within the so-called average capability there was also a wide range of variation. So far the capability for binocular vision had escaped a similar critical study. Our tests either determined the presence or absence of binocular vision, or were complicated—as in the use of prisms and stereoscopes—by muscle stresses which vitiated the results.

The diaphragm test was a pure test for binocular vision, and by a variation of its mode of application it was possible to measure the desire for binocular vision, as easily as the stature or weight of a man could be ascertained.

The test-cards seen through the hole in the screen of the test were viewed for their greater part by each eye separately, but a median band was seen by the direct vision of the two eyes together; this median band acted as a balancer to the eyes and their controlling mechanism, for this reason it was called the "Ocular-poise."

Experiments showed that different individuals, and the same individual under different conditions, required different breadths of ocular-poise, the more perfect the binocular vision the narrower the ocular-poise required to maintain the eye balance; hence the smallest measure of the ocular-poise became the measure of the desire for binocular vision.

The standard pattern Diaphragm test had a fixed hole in the screen of 17 mm.; the instrument to measure the ocular-poise had a veritable aperture. The aperture was varied by means of shutters which were moved by suitable gearing, the variation of the ocular-poise was shown automatically upon a scale. The scale had a compensating adjustment for the varying width between the eyes



of different subjects, so that the measures given by the test became truly comparative.

Examination of binocular vision by this means showed how essentially cerebral was the controlling mechanism of the eyes, how greatly it varied in different individuals, and how profoundly it was affected by conditions of ill-health and fatigue. There seemed little doubt that on these points the test opened up many possible fields for physiological and psychological enquiry.

To the ophthalmic surgeon the new test had a particular value for those cases of occasional divergent squint with feeble convergence which were due to defective cerebral control. These were those for which at present we had been able to do but very little. With the variable aperture to the diaphragm test the ocular-poise could be made so large as to present an attractive point of binocular fixation; and with practice, control of the eyes might be developed, so that the balance could be maintained under conditions of gradually increasing difficulty.

**The Measurement of Hyperphoria by Means of the Diaphragm Test. By. N. Bishop Harman.**

If a line of letters or figures be viewed through the hole in the screen of the Diaphragm test, they appeared in perfect order and alignment to the man with good binocular vision and balance. In the case of latent squint the order and alignment of the letters was altered. The line 123456789 would appear on two levels to the man with hyperphoria, in right hyperphoria thus:—12345

56789.

The displacement was found to be constant for equal degrees of divergence, and proportionate for different degrees. So as to be able to measure the degree of divergence directly, a test-card had been prepared: one-half bore a vertical tangent scale, the other a horizontal pointer. When viewed through the Diaphragm test the scale was seen by one eye, the pointer by the other. When there is hyperphoria the pointer was displaced from its neutral point and appeared shifted upwards or downwards according to the kind of hyperphoria, and rested at a level of the scale corresponding to the degree of latent squint. The degree indicated was the degree required in the correcting prism: or the same result could be obtained by measuring directly the decentralization of any glasses worn by the patient.

The president discussed the papers, and Mr. Harman replied.

## SECTION ON OPHTHALMOLOGY—COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting, October 21, 1909.

DR. WM. ZENTMAYER, chairman, presiding.

### **Proptosis of the Eye, Probably Due to Tuberculous Involvement of the Orbit.**

Dr. S. D. Risley presented for study a patient who had been assigned to his Wills Hospital service on August 10, 1909, with a proptosed right eyeball, marked edema of the lids, and chemosis of the conjunctiva, the thickened fold of which covered the greater part of the cornea. He suffered from severe headache. The conditions grew worse, notwithstanding the use of large doses of potassium iodide followed by mercurial inunctions. On September 1 the parotid gland enlarged to the size of an egg and the right jaw and its ramus was swollen and hard, presenting all the features of a periostitis. The teeth were healthy and there was no evidence of alveolar disease. The tongue was large, pale, and indented by the teeth; the nose was large and pendulous, the lips thick, the finger ends clubbed, and the nails purplish. The skin was muddy and opaque, the man listless and stupid. He was then placed in bed and the pulse rate and temperature recorded every four hours for two days, and no variation from the normal discovered. He then received a hypodermic injection of one minim of old tuberculin. The following day there was general malaise and marked general and local reaction lasting two days. The man's general condition then improved, but in ten days there was no notable improvement in the local conditions, but the increase in size, which had before been rapid, ceased. A second dose of one minim was then injected, which was also followed by both local and general reaction. After its subsidence, the local and general conditions rapidly improved, so that the patient wished to leave the hospital, and objected to a third injection, as "it made him sick," but finally consented. The reaction was very slight and transient. On October 4 his personality had undergone the most marked transformation: the proptosis, edema, chemosis, and the deformity produced by the enlarged parotid and swollen jaw had entirely disappeared. On October 9 the man returned to his work.

Dr. Hansell thought Dr. Risley was to be congratulated on his splendid success in the treatment of his case—restoring a very sick man to almost perfect health. Most of us would assume, on the first inspection of the patient, that he was suffering with gumma of the orbit, and would have put him under treatment for that af-

fection. The pronounced reaction following the injections of tuberculin, the rapid absorption of the deposits in the gland and in the orbit, in short, his speedy recovery, therapeutically prove that the diagnosis of tuberculosis of the orbit was correct.

### **Detached Retina Replaced by Scleral Puncture, with Recurrence.**

Dr. J. Norman Risley reported a case of spontaneous detachment of the retina with only light perception in the upper portion of the temporal field, replaced by posterior sclerotomy in upper temporal quadrant of ball, pressure bandage, pilocarpin hypodermically and subconjunctival salt injections on alternate days, and absolute rest in bed for three weeks, with the result of 6/15 vision and normal field. After three weeks the patient returned with gradually failing vision, until at present he can count fingers only and there is a general recurrence of the detachment of the retina except immediately surrounding the disk.

Dr. Turner cited the case history of a man, aged 29 years, who in August of this year had a fall from a bicycle which caused retinal detachment in an eye from which a soft cataract had been removed in 1903. On September 7 the vision with a correcting glass was 6/1+. The visual field revealed a detachment of the retina up and in, extending from the fiftieth degree above to the horizontal meridian. On October 7 the vision was 1/40; tension was normal or slightly increased for an aphakic eye.

The patient's other eye was enucleated in 1903 for a probable growth.

Dr. Turner requested some suggestions as to treatment.

Dr. Ziegler believed that scleral puncture was the only surgical procedure that would relieve retinal detachment. He related one case of extensive detachment that recovered and retained useful vision. He thought the value of scleral puncture lay in the adhesions that it created between the retina and choroid. Each puncture is followed by plastic inflammation that glues the tissues together. He made the suggestion that multiple puncture might encourage reattachment at several points. He employs De Wecker's procedure, plunging the Graefe knife through the sclera, draining off the subretinal fluid, puncturing the retina, and turning the knife at right angles as it is withdrawn. This promotes leakage long enough for adhesion to take place.

Dr. Zentmayer said that in his experience the results of the operative treatment of detached retina had been no better than those secured by rest, bandage, atropine and sweating. He would not

expect operative treatment alone to be of service except in traumatic cases, as in other cases the cause of the detachment was either a local disease or a systemic affection, neither of which would be removed by the operation, so that any benefit derived by the operation would of necessity be temporary.

### **A Case of Temporary Monocular Amblyopia, Possibly Due to Embolus in the Optic Nerve.**

Dr. Howard F. Hansell reported the case of a girl, the subject of chronic endocarditis, in whom vision of the left eye had suddenly become partially lost. Two weeks later, vision having undergone no change, she applied for treatment. A five days' course by mercury and iodide of potassium restored the vision to full acuity. The ophthalmoscopic findings were negative. No changes from the normal in the appearance of the disk; no pathological alterations in the caliber or course of the arteries or veins; no hemorrhages or patches of any kind, and no sign of exudation in the foveal region were manifest.

The diagnosis was tentative and was reached by exclusion. Hysteria was dismissed, because of the blurring of the entire field, the absence of sector defects or scotomata, or the reversal of the color fields, and the usual stigmata of hysteria; edema of the sheath and hemorrhage within the sheath and central retinochoroiditis, because of the persistently normal condition of the vessels of the nerve and retina; and cortical or cerebral disease of any kind for obvious reasons.

Dr. Hansell thought that valvular disease of the heart in his patient, one of long standing and quite marked, might be considered as the original cause of the amblyopia. The course pursued by the embolus of fibrinous material from a diseased heart was, of course, through the circulation, until it reached a branch of the central artery of the retina, and, being too large to enter any of the finer branches, was stopped in its course by the wall dividing the artery from one of its branches, thus interfering a little with the stream of blood as it was passing into the retina, and obstructing totally that which should have passed into the branch.

The stoppage of the blood created no doubt an edema of the fibers of the nerve, similar to that frequently seen in the retina following embolus of one of the branches. The function of the fibers of the nerve was thus temporarily destroyed, with the resulting deterioration of vision.

Dr. S. D. Risley said that he had followed with great interest Dr. Hansell's admirable and careful analysis of the unusual and

complex clinical history he had presented. He could offer no other conclusion in explanation of the symptoms, certainly no more satisfactory explanation, than that given by Dr. Hansell.

Dr. Ziegler believed that the cardiac symptoms in Dr. Hansell's case must influence the diagnosis. He recalled a case of embolus of the central retinal artery which was followed one week later by varying obscuration of vision in the other eye, which he believed was due to a second embolus hovering near this eye. For some reason it did not plug the vessel up, but only partly filled the lumen. Recovery occurred in the second eye, but vision was somewhat impaired.

He further stated that the symptoms simulated those visual obscurations caused by a semi-occluded sphenoidal sinus, in which there was vascular engorgement from mechanical pressure. He had seen such a case occur without apparent fundus lesion and followed by complete recovery.

#### **Parinaud's Conjunctivitis, with Unusual Complications.**

Dr. Krauss reported a case of *Parinaud's Conjunctivitis, with Unusual Complications*, occurring in a colored female, aged two and one-half years. The affection at first resembled an attack of purulent conjunctivitis, with broad ridges in the tarsal conjunctiva. Later, the latter were sharply outlined by a tenacious grayish exudate, which later cut the ridges into granulomata.

About three weeks after the beginning of the affection the lachrymal sac became acutely involved with free pus exuding from the right nostril.

The pus showed no microorganisms in smear or culture. After six months the conjunctiva is still thickened in the fornix, with watery discharge from the lachrymal sac. The glandular involvement is subsiding without undergoing suppuration.

#### **V-Shaped Iridotomy.**

Dr. Zentmayer presented a patient on whom a *V-shaped Iridotomy* had been successfully performed. Several months previously a complicated cataract extraction had been performed and had been followed by a severe iridocyclitis completely blocking all but a pin-point coloboma just behind the upper limbus. No difficulty had been encountered in cutting through the iris tissue and the capsule behind it. There was no marked reaction following the operation, and there is now a large V-shaped opening giving the patient a visual acuity of 5/20. The vitreous is filled with large, flocculent opacities.

Dr. Ziegler, at the suggestion of the chair, briefly described his

operation of V-shaped iridotomy as follows: The knife-needle is entered at the limbus above, passed across the anterior chamber, swung 2 mm. to the left of the vertical plane, the membrane punctured by a quick thrust, and a sawing incision carried upward without making any pressure. The knife is then raised through the oval slit thus formed, carried across the anterior chamber to a point 3 mm. to the right of the vertical plane, and a second incision executed to meet the first just inside of its upper extremity. This

forms a V-shaped cut which opens into a triangle or becomes more oval, according to the degree of resiliency present in the tissues. If the apex of the tongue is too stiff to retract, its base can be punctured and turned down and back, or the cornea may be incised below, and the iris tongue drawn out and excised.

Dr. Ziegler commended the excellent result achieved by Dr. Zentmayer. He believed that this operation would prove successful in 99 per cent of all cases. He had used De Wecker's procedure in a few cases for special reasons.

Dr. Hansell stated that he was a strong advocate of Dr. Ziegler's operation for the incision of membranous cataract. He had performed it repeatedly and had yet to meet with failure. His last patient was operated upon for the extraction of senile cataract last June. The eye became infected and he believed that recovery was hopeless. However, the persistent treatment, with frequent instillations of argyrol, forced into the anterior chamber, checked the purulent process. Three weeks ago he cut the dense membrane in the pupil, and with Dr. Ziegler's knife secured a fine oval pupil, through which the man had good vision.

It seemed to him unnecessary in all cases to make the two incisions. When the membrane contracts sufficiently to form the large pupil following the first incision, he generally omitted to make the second.

Dr. Turner inquired of Dr. Ziegler concerning the probability of hemorrhage and the length of time one should wait before operating on the membrane.

Dr. Ziegler, in reply to Dr. Turner's queries, said that hemorrhage was rare, but occurred where the membrane was vascular, or in certain cases where the tension was lowered by leakage of aqueous through the corneal puncture. As to the length of time he would allow to elapse for subsidence of the iridochoroiditis which caused the membranous occlusion, he thought that two months would be an average convalescence, but this period might vary in different cases.

T. B. HOLLOWAY, M. D.,

Clerk.

# THE OPHTHALMIC RECORD

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## CATARACT RESULTING FROM ELECTRIC SHOCK; BEING A BRIEF REVIEW OF THE LITERATURE, WITH A REPORT OF THREE CASES.

BY JOHN M. ROBINSON, M. D.

DULUTH, MINN.

In 1722 Charles de St. Yves (<sup>12</sup>) in his *Modern Treatise on Diseases of the Eyes*, speaks of ocular injuries resulting from lightning stroke—and that at greater length than any of the text-books of the twentieth century which have come to the writer's notice. Again in 1843 Himly (<sup>1</sup>) discusses the same subject and cites the first reasonably authentic instance of cataract following a stroke of lightning. Since that time nearly forty cases coming in this category have been put on record; of these, however, only one in the United States (<sup>21</sup>) against twenty or more in Germany; nor can we exactly ascribe this difference to any greater frequency of thunder storms in central Europe, nor to the protective influence of the Yankee lightning-rod. More recently there have been reported some four or five cataract cases from accidental contact with high voltage electric currents, which is a relatively small record, considering the far greater number of severe shocks from this source than from lightning. Indeed, from now on more of these industrial injuries may be expected from stray "juice" from the ever increasing electric wires.

Case I.—W. H. K., an electrician, aged 31, in good health, on February 20, 1908, received an electric shock estimated at 13,000 volts. The current entered the head about an inch above the right ear, emerging from the right forearm, producing in both of these areas deep burns. The man was confined to his bed for two weeks, and on account of the burns was under the care of a surgeon for some further period. It was, however, a month before he first noticed that his sight was in any way disturbed, there being at first only a slight blurring, which gradually increased. He came under my observation in July of the same year. There was then no ex-

ternal evidence of any ocular disturbance: the pupillary reflexes were normal: there were no paralyses. Deep, red scars were in evidence in the temporo-parietal region and on the forearm on the right side.

The vision of the right eye was 20/100; improved to 20/40 with  $-2$  sphere. Read J. No. 9; and with  $+3.50$  sph., J. 1 with difficulty. Field very slightly contracted. V. L. E. = 20/30 and J. 1 with difficulty: neither could be improved.

On examination, the pupils having been dilated with cocaine, the right lens showed numerous fine, grayish dots, the majority of which were confined to the anterior cortex, some being directly subcapsular. These points were discrete in the central area of the lens, but at the equator arranged themselves in pyramid-like clusters. A similar condition presented itself in the left lens, save that the dots on this side were only about half as numerous. In all other respects the media and fundi of both eyes appeared to be normal. The urine was free from albumin and sugar; and there was no history of pain or irritation at any time. Two months later the vision of the right eye was reduced to 20/200, with now no improvement with plus spheres. At the end of another two months' period a further slight decrease was found, with the right lens exhibiting a faint cloud-like opacity, passing through the upper half of the anterior cortex, and more dots were seen close to the capsule, both in front and posteriorly. A year after the accident these points had arranged themselves in a somewhat rosette form. The vision remained about 15/200 until three months later (fifteen after the shock), when the opacity rapidly became total.

The lens was needled in July, 1909, and shortly after removed by a linear extraction. The vision, with correction, is now 20/20. In the meantime the condition of the left lens has remained stationary, the vision being 20/40  $+$ , and the dots in this lens showed little tendency, during the two years, to either coalesce or increase.

The following occurred in the practice of Drs. Thomson and Coe, of Spokane, Wash. It has not before been put on formal record, and I am indebted to Dr. Coe for this opportunity of placing it in comparison with the above case of my own.

Case II.—J. C., aged 21, an electrician, in perfect health, in November, 1903, grounded an electric wire carrying 45,000 volts, of which it was estimated 26,000 passed through his body. He was knocked unconscious and artificial respiration resorted to for six



hours before he breathed without assistance. He was unconscious for a couple of days. As soon as his physician allowed him to read he found that his vision was dim. There was some disturbance of sight from this time until March, 1905, at which time he first came under observation. The vision was then 20/50 in each eye. The lenses were both clear, but the vitreous body in each eye was decidedly hazy. Under treatment this cleared up. The following May, however, he returned with rapidly developing cataracts in both eyes. Thus, though there had been some visual disturbance due to vitreous opacities, it was eighteen months after the accident before any changes in the lenses began to be noticeable. There was at first a diffuse haziness; but neither dots nor streaks were observed. A month later needling was commenced. With correction the vision is now 20/20 in the right eye, and 20/30 in the left—a bit of capsule slightly obstructing on this side.

Case III.—S. F., aged 53 (in appearance several years older), was knocked to the ground by a street railway current of 500 volts. He was able to resume his work in a few minutes. The point of contact was evidently the right malar region, where there was a slight burn. There also developed immediate pain and tenderness over the right mastoid, in which locality a superficial abscess soon made its appearance. A moderate degree of deafness and timitus dated from the moment of the accident. The physician in charge observed partial ptosis on the right side, which disappeared in the course of six months. The man also complained, from the first, of some blurring of his sight, but an oculist was not at the time consulted. The case came under my observation eighteen months after the accident. Four or five small bluish points were noted an inch below the right lower eyelid. There were also fine scars back of the right ear and on the forearm, which were said to have followed the burning caused by the electric current. The man was apparently in good health. The urine was free from albumin and sugar. The vision of the right eye was a trifle better than 20/30. Read J. 1 with difficulty with presbyopic correction. V. L. E.=20/50, and J. 14, with correction.

The pupils were well dilated with cocain and homatropin, after which there was seen a sharply circumscribed opacity at the nasal edge of the right lens, being largely, though not entirely, capsular, and about 2 mm. in width. On this side no other abnormality was noted. Examination of the left eye disclosed a moss-like, floating opacity in the anterior part of the vitreous. The fundus was normal

and the central portion of this lens clear; but at the extreme edge almost encircling the entire lens were peculiar bluish-black spots of discoloration—indentations, fifteen or twenty in number, none of them a millimeter in depth. This dark mottling was confined to the equator. Examination of both eyes nine months later gave the same results; nor was there then any sign of ordinary senile cataract.

Of these three cases the first is fairly typical of "electric cataract" in the manner and length of time of its development, and more especially in its punctate character; while the second is noteworthy on account of the lapse of time between the accident and the first appearance of the lenticular opacities. Case III is one of ptosis and vitreous opacity following electric shock; the changes in the lenses, which I have described, may possibly not have arisen from this same cause; but they, at least, indicate the importance of a careful examination after a severe electric shock to the head.

Some years back, as the several cases of cataract after lightning began to be reported, various theories were suggested to explain the cause and pathology of the lenticular opacities. Yvert (<sup>5</sup>) propounded the theory that minute ruptures in the capsule permitted the aqueous to act on the lens cortex. Kiribuchi (<sup>43</sup>) seems partly to hold to this idea, although his accounts of his experiments do not clearly show that such ruptures were ever demonstrated. Leber (<sup>7</sup>) looked upon the opacities as due to albuminous coagulation; but were this the true pathology, the opacities would show themselves promptly after the shock, whereas, in two-thirds of the clinical cases they have developed gradually. Further, I have repeated the experiment of Professor Hess, and found that the passage of a strong electric current through a freshly isolated lens has no visible effect upon it. Knies (<sup>11</sup>) offered the rather curious suggestion that these cataracts result from the powerful contraction of the ciliary muscle following the shock; while Vossius (<sup>15</sup>) regarded at least one of his two cases as the result of a recurrent irido-cyclitis which followed a lightning stroke. Finally Widmark and Sillast (<sup>46</sup>) suggest that the ultra-violet rays may be the causative factor in the production of "electric cataracts." It is now, however, more than twenty years since Hess at the International Congress at Heidelberg (1888) demonstrated that in animals electric shocks cause lens opacities by producing gradual death of the cortical cells, the process commencing close to the capsule; these experiments being some years later elaborately corroborated by Kiribuchi. (<sup>43</sup>) While

the conclusions drawn by these two investigators do not altogether coincide, their actual findings are, indeed, very much the same. Very soon after an electric current has been passed through the head of a cat or rabbit, in the neighborhood of the eye, there occurs sharp chemosis, attended often by ischemia of the iris and marked myosis. Occasionally there is dilatation of the pupil; this I have noticed when the animal is rendered unconscious by the shock, and the mydriasis may remain for several days. If the shock has been severe the cornea becomes cloudy after an hour or two; but tends to clear up if not actually burned. The anterior chamber sometimes partly fills with an exudate, while the ciliary body in the course of the first hour will always be found to be highly hyperemic, its anterior portion pressing forward as a bluish red swelling between the iris and the lens. In the meantime the iris appears to be but little involved in this hyperemia. The ciliary swelling and congestion disappeared in some cases in a few days, or may remain for three or four weeks. Minute hemorrhages can often be observed in Petit's space. The zonula is described as being loculated after electric shock, and frequently to such an extent that in making preparations the slightest pulling or stretching serves to separate the lens from the ciliary body. Immediately after the shock the lens appears to be quite clear, but in the course of an hour or two one may notice a faint cloudiness at the equator, and especially in that area where the ciliary hyperemia is greatest. During the course of another hour or two this opacity increases until it appears as a grayish white line running parallel with the edge of the lens. The opacities now spread with varying degrees of intensity, some in the course of two or three weeks becoming total, some clearing more or less entirely.

The early microscopical changes mentioned by Hess (<sup>46</sup>) consist of an extensive alteration of the anterior capsular epithelium. Sometimes a considerable mass of dead epithelium is separated from the capsule by a flaky, albuminous substance; or again the epithelium remains clinging to the capsule, while the dying ends of the cortical fibres are separated from it by a more or less rich quantity of fluid, in which for some time after the death of the cells and fibres, the more resistant nuclei can often be found huddled together in thick clumps. A similar process takes place in the posterior cortex. Among the lens fibres, which may otherwise appear quite normal, there is described a tendency to vacuole formation; and this occurs especially near the equator. In those instances

where total cataract supervenes the lens fibres swell and degenerate with varying degrees of rapidity in different animals; in those where the cortices later cleared up capsular thickenings occasionally remained.

The published accounts of clinical examples of cataract following electric shock vary considerably, yet, to a certain extent, they correspond to the above brief outline of the results of experiments on animals. That the ciliary body in animals was found to be so promptly disturbed and the equatorial area of the lens so particularly affected to some extent explains the changes in the edges of the lenses mentioned in Case III, and the small hemorrhages found in Petit's space suggest one of the points of origin of the vitreous opacities occurring after electric shock.

In reviewing the literature I have found references to 36 cases; 1 of which came from shock from the industrial current\*—the others resulting from lightning. Of the total, 17 were unilateral and 16 bi-lateral, with this point not noted in the other three. The records of four or five cases could not be obtained either in the original or in satisfactory abstract. Among the cases due to lightning, 10 out of 30 showed decided cloudiness of the lens within 24 hours after the shock, while in the other 20 the opacities were first observed at periods varying from two weeks to almost two years. The first mentioned were nearly all complicated with other intraocular damage; one would naturally regard them as due to concussion, i. e., traumatic cataracts; while the latter belong to the type of secondary degeneration, here more under consideration. In a few of the reports the details are not sufficient to determine how soon the opacities did make their first appearance. The four instances of cataract due to the industrial current were all of slow development. In 12 cases which were under observation from the date of the accident the average time of the first appearance of any opacity was six months. In one of Prindlsberger's<sup>(23)</sup> patients, as well as Pagenstecher's<sup>(24)</sup>, more than a year elapsed before cloudiness was noted. Dr. Coe's case (II of this article) seems to hold the record in this respect. Silfvast<sup>(25)</sup> reports slight cloudiness the first day, and a "stellate cataract" in a fortnight, but at the end of six weeks the lens was again quite clear. Silex<sup>(12)</sup> mentions a young child which showed a streak through the lens on the third day which entirely cleared in the course of two weeks, but later appeared again, ultimately the lens becoming entirely opaque.

\*One case reported since this was written; see last reference.

Of the nearly fifty affected lenses, included in this study, about one-half are described as "dotted," "flecked" or "punctate" at one time or another in the course of the cataractous degeneration. This was especially noticeable where the cataract was of slow development, as in the industrial current cases. In certain of the earlier records few details are given as to the appearance of the lens: in others the eyes were not examined until long after the shock, thus dots or flecks may have been present in these cases and escaped attention. Servais' (<sup>4</sup>) case was a "demi-dure" cataract in two months: Downar's (<sup>6</sup>) was "anterior polar," found ten months after a stroke of lightning: Pagenstecher's (<sup>8</sup>) a large, flat, square opacity in the posterior cortex: Knies' (<sup>11</sup>) a broad, stripped opacity on one side, and a large posterior polar of stellar character on the other. In very rare instances only, where the opacities developed slowly, were they uniform in appearance from the beginning, thus: Lingsch (<sup>30</sup>) reports such an example commencing at the fourth month. With this we have Case II to compare.

The tendency of the dots is to coalesce, and eventually for the opacity to become total. Ginzburg's (<sup>32</sup>) case was still partial and stationary at the end of six years, while Widmark (<sup>27</sup>) waited with one of his three patients for seven years before the eye became blind from the opacity. Dr. Stillson (<sup>36</sup>) writes me that the dots began to coalesce at the end of two years in his patient, but that the vision was still 20/40 when the man disappeared from further observation. On the other hand, Bistis' (<sup>34</sup>) case, which was of the progressive, punctate variety, became total in four months. The dots are usually described as being gray, very fine, and scattered through the anterior and posterior cortex—especially the former. From the findings of Hess and Kiribuchi in animals we may assume that the dots found at first close beneath the forward capsule are bunches of dead capsular epithelium. Nor am I able to find record of any other series of punctate cataracts due to any known and uniform cause. C. Wray (<sup>47</sup>) describes several instances of fine dots in the lens periphery, but all of unknown origin: while we are informed in general that *cataracta punctata* is an unusual form of congenital lenticular change (de Schweinitz). Opacities experimentally produced by naphthalin, however, have sometimes shown somewhat the same dotted appearances as those occasionally resulting from electric shock (<sup>46</sup>). One may almost assume to Latinize this group—of which my Case I is a fair type—into *cataracta punctata electrica*.

Grosz (<sup>3</sup>) and Landreau (<sup>2</sup>) mention capsular cataracts: but when surgical intervention has been called for unusual toughness of the capsule is little spoken of in the several records reviewed. The occasional capsular hyperplasia found experimentally (<sup>46</sup>) does not, therefore, seem to have especially manifested itself clinically.

Chenosis and corneal opacity have several times followed lightning stroke. Various paralyses, as ptosis and cycloplegia are occasionally mentioned. Pagenstecher's case showed "almost total paralysis of the dilator fibres of the iris"; and also one or two instances of palsy of the external muscles have been recorded (<sup>14-40</sup>). Not only paresis, but also spasm of accommodation is mentioned (<sup>29-35</sup>), and when we take into consideration how much the ciliary body was found to be affected in animals these temporary disturbances of refraction are explained. The tendency of all these nerve affections is toward recovery, as is instanced in my Cases I and III. Of more intimate relation to the subject of cataract has been the occurrence of iritis and irido-cyclitis which have been recorded some half dozen times (<sup>16-18-22</sup>). Among the examples from the industrial current, only Ellett (<sup>37</sup>) mentions "congestion of the iris." Hypopyon is once recorded (<sup>22</sup>).

But clinically, as also in animals, the iris has as a rule escaped with little disturbance. Vossius, himself, regarded the cataract which occurred in his second case as secondary to the iritis: but as he describes the lens as showing many dots it would now seem more likely that it was the direct result of the lightning stroke. Choroiditis, retinitis, rupture of the choroid, retinal hemorrhage and partial and total atrophy have resulted from lightning stroke both with and without the occurrence of cataract. I find no instance, however, where such deep intraocular lesion has failed to manifest itself promptly after the accident: nor any case of slowly progressive optic atrophy where there was no early disturbance of vision: so that in a given case where there has been an interval of fair vision, with the later development of cataract traceable to an electric shock, the prognosis must be good as regards hidden fundus changes. In the majority of the "lightning" cases there were complications, yet in spite of these some fair results are reported as the result of needling or linear extraction or the two combined.

That cataract does not always follow severe electric injury to the eye is evidenced by the reports of Reich (<sup>38</sup>), Lunsgaard (<sup>39</sup>),

Pfahl (<sup>10</sup>) and others who mention burns of the corneal epithelium, ocular palsies, retinal hemorrhage, etc., without the later occurrence of lenticular opacities. But since, as we have here seen, a cataract may come on slowly and late after an electric shock, or the opacity be only of a fine, dust-like character, or confined to the periphery of the lens, so must the examination be thorough, and repeated after a long interval, lest minor examples of this interesting condition escapes detection.

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## A CASE OF HERPES ZOSTER OPHTHALMICUS.

BY EDWIN A. CLARKE, M. D.

CANON CITY, COLO.

(Illustrated.)

This photo is a case of Herpes frontalis in a man of 80 years. The case was so typical of this comparatively rare disease that there is little to say regarding it, but let the picture tell its own story. The location of the eruption exactly corresponded to the whole of the area of distribution of the ophthalmic branch of the fifth nerve. The vesicles were most numerous on the forehead and upper lid,



but extended to the side, top and ala of the nose and a short distance on the scalp in less numbers. The median line was sharply defined by the edge of the eruption.

One vesicle, which was located in the center of the edge of the upper lid, later became the seat of an ulcer which totally destroyed the whole thickness of the lid, leaving a small circular opening



about 3 mm. in diameter, exposing the cornea, when the lids were closed. The central part of the cornea which corresponded to this spot, when the eye was at rest, became the seat of ulceration and later the sight of the eye was lost, by reason of this condition.

Before the case had terminated the patient removed to a distant state, so I am unable to record certain features of the case that would be of interest. I am informed that he survived about a year after I last saw him.

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## REPORT OF RECOVERY FROM CHRONIC SYMPATHETIC OPHTHALMITIS WITH NORMAL VISION.

By GEORGE FRIEBIS, M. D.

PHILADELPHIA.

(Illustrated.)

In reporting this very rare case of recovery and with normal vision it is not my intention to dwell upon the much discussed and as yet undetermined question as to the mode or route of transmission or infection.

Herbert Bullington, an iron worker, 20 years of age, residing at Elizabethtown, Pa., while engaged at his work was struck in the left eye on October 28, 1908, by a piece of steel. The wound healed, but one month after the injury, inflammation ensued. He consulted a physician in Harrisburg under whose care he remained for some months.

On March 9, 1909, he came to Philadelphia and became an interne patient at Wills Eye Hospital. During his treatment at the hospital the injured eye induced inflammation in the sound eye and was enucleated by Dr. Posey. The patient was discharged on June 26.

The rare clinical feature present in the R. E. of this patient warranted, I thought, his presentation to the section. He consulted me on June 29. Upon examination I found the following conditions prevailing: Decided sclero corneal congestion; photophobia; tenderness in ciliary zone on palpation; tension about normal; complete posterior synechiae, irregular in outline of attachment to the lens, the latter being somewhat opaque from the plastic exudates of the irido cyclitis. The iris, in more than one-half of its circumference,

was distended in the form of a vertical crescent by fibrino-plastic exudates, and the iris atrophied; the central portion of the lens clear. Vision 15/200, fundus presented a hazy appearance, but no pathologic changes of the papilla or fundus were discernible, save a



very small atrophic patch in the superior quadrant of the retina near the edge of the disc.

In view of the fact that he had been under treatment for a period of eight months, his low degree of vision and the general hyperaemic condition of the eye, coupled with the usual hopelessness of these cases, decided me to give an unfavorable prognosis.

In his present condition of reduced vision and sensitiveness to light, he was unable to earn a livelihood. I stated to the uncle of the young man, however, who had him in charge, that I would make an effort to arrest if possible any further pathologic changes. Thereupon I ordered the patient to bed, exacting implicit obedience to my instructions, and the following treatment was pursued for several months:

Preliminary to constitutional treatment a large calomel purge was given; mercurial inunctions in the right temporal region at bedtime, hot moist compresses every two hours, for a period of ten minutes, sweat baths three times weekly, atropine and dionin instillations three times daily and occasional blistering of the right temporal region; Potass. Iod. in ascending doses until the stomach revolted at sixty drops, when the drug was discontinued for a few

days; later sodium salicylate was used with excellent result and was well borne.

The patient reported to me again in five days after the inauguration of this treatment, and a slight improvement was noticed in the subsidence of the sclero-corneal congestion; less tenderness to the touch, and vision had risen to 15/100. On July 9, ten days after the patient first reported to me, vision had risen to 15/50, this of course justified encouraging the patient. Suffice it to add that from this time on vision slowly and steadily progressed until October 5, since which time vision and field have been normal. The accompanying cut is a very accurate picture of the patient's eye when he first consulted me.

From the beginning I looked upon the case as a forlorn hope, but I feel now that it is reasonable to assume that this undoubted case of chronic sympathetic ophthalmitis having recovered normal vision, despite the serious pathologic changes which had taken place in the ciliary region, iris and lens, may be considered restored to permanent usefulness.

N. B.—This article was read on November 8 before the Ophthalmic section of the Philadelphia College of Physicians. Patient presented.

## A CASE OF CONGENITAL CATARACT OF AN UNUSUAL TYPE.\*

WILLIAM ZENTMAYER, M. D.,  
PHILADELPHIA.

The patient, a man 43 years of age, states that he has had poor vision as long as he can remember and that in childhood the trouble had been diagnosed as cataract. He states that he has a brother similarly affected.

In the lens of each eye there is an irregular disc like grayish white opacity with a pin head sized central white dot above and to the inner side of the center of the pupil at a deeper level than the iris plane. This is surrounded by a grayish opacity mottled and having a somewhat tessellated appearance due to subdividing denser lines. Under mydriasis the surrounding opacity is seen to extend almost to the equator of the lens. The latter is very thin, the edge being highly refracting and appearing as a fine silver hair. The whole shrunken lens is dislocated upwards and inwards. In the L. E. the central opacity is not so deeply placed and the luxation not so great.

The L. E. was selected for operation because it had the poorer V. ( $1\frac{1}{2}$  LX); the vision of the R. E. being  $11\frac{1}{2}$ /LX. With a knife-needle the opaque disc was picked off and fell behind the iris. Nothing more was done at this time but later it was found that little had been gained because of the hole in the capsule being eccentric to the center of the pupil. After the eye had become quiet the capsule was freely incised and a very small amount of cortex was found to be present. For a few days there was little reaction but later a most violent irido-cyclitis developed, the eye remaining intensely congested for six weeks despite the use of massive doses of salicylate of soda, and the almost continuous use of cold compresses. About the fourth week an exudate appeared at the bottom of the anterior chamber, which was removed by paracentesis. This reformed but in the past ten days the eye has gradually become quiescent. Vision is a trifle worse than before the operation.

The case evidently belongs to that class of congenital cataracts due to the faulty development of the nucleus of the lens (Collins). According to Collins, in section the lens is seen to be flattened antero-posteriorly. There is a round mass on either side connected

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\*Paper read and patient presented at the Section on Ophthalmology, College of Physicians of Philadelphia.

by a band. In the central flattest part of the lens a laminated mass of tissue is situated, similar to anterior polar cataract; it extends backward to the posterior capsule, no lens substance intervening. Surrounding the central laminated mass there is lens matter. Clinically it presents the following characteristics: The presence of a dense, circular, central white opacity, which while extending to the anterior capsule, is at a distinctly deeper level than that of the surface of the iris at the pupillary margin; some irregular grayer opacity in the immediate vicinity of the central white patch, in which the latter seems to be set. If the edge of the lens is visible it will be seen to be clear, but it will not present its normal rotundity, appearing too thin from before backward.

Collins advises that the central white plaque be separated from the rest of the lens and allowed to drop into the bottom of the anterior chamber. Whether in my own case the presence of the disc in the posterior chamber caused the severe iridocyclitis or whether it was the result of an operation upon an otherwise diseased eye is an open question.

## Reports of Societies

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### OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

An ordinary meeting of the Society was held in the Medical Society's rooms on Thursday, December 9, 1909, Mr. W. H. H. Jessop, vice-president, in the chair.

Mr. S. Stephenson showed a case of tubercle of the choroid, shown originally on October 17, 1907.

Mr. Bishop Harman showed three cases: (1) Abnormal congenital pigmentation of one eye. (2) Retinitis Maculus. (3) The diaphragm test. Finished models of the instrument and its accessories.

Dr. Rayner D. Batten showed an orbital frame for eyeglasses, and its adaption for a ptosis prop.

Mr. A. H. Payan Dawney: Opacities of cornea of unusual character.

Mr. Hepburn exhibited a case of hemorrhages of the macula.

Before the papers of the evening were read, the chairman alluded in very sympathetic terms to the recent demise of last year's president, Mr. R. Marcus Gunn. He alluded to the large number of contributions which the late distinguished member had contributed, all marked by great accuracy and care in observation. Mr. Jessop also dwelt affectionately on Mr. Gunn's personal qualities, and his faculty of endearing himself to all with whom he was brought in contact. It was resolved to send a letter of condolence to Mrs. Gunn and family.

Mr. Doyne read a paper, describing a form of conjunctivitis in which the meibomian glands were affected with *staphylococcus aureus*. This, he described, as giving rise to definite acute attacks, especially after exposure of the eyes. He also pointed out that many cases described as chronic conjunctivitis were due to this cause, as well as many other cases of marginal blepharitis.

Mr. Doyne showed a member of a fresh family suffering from guttate choroiditis, which he described some years ago, and gave a brief description of the condition.

He also read a brief note on a condition that he described as myopic degeneration of the lens and had pointed out the condition to the Society in 1886 when he showed a patient suffering from this form of nuclear degeneration.

He also read notes of a form of iritis which he described as

guttate iritis, occurring in elderly and gouty persons. It presented the appearance of one or more warts at the pupillary margin of the iris, which came on without any noticeable inflammatory appearances and sometimes disappeared without giving rise to any inflammation. At other times inflammatory symptoms appeared and adhesions to the lens took place.

Mr. Harman, in discussing the first paper, said that seven years ago he made bacterial cultures from the normal healthy eyes of school children by passing a platinum loop along the mouths of the Meibomian glands, and in every case he got enormous numbers of staphylococcus aureus and albus. Mr. Doyne, in reply, asked members to look out for such cases and endeavor to ascertain the exciting cause, but for five days nothing but water should be used in the eyes. Dr. Doyne's other papers were discussed by Mr. Nettleship, Mr. Harrison Butler and Mr. J. E. Adams. Mr. M. S. Mayou read a communication entitled "A Congenital Sarcoma of the Orbit." He pointed out that the interest of this case lay partly in its extreme rarity and partly because of its clinical resemblance to the proliferating cysts.

*Case.* A. P., male, aet. 12 days, was admitted to the Central London Ophthalmic Hospital on March 13, 1908. No eye had been seen since birth on the left side. The patient was a strong, healthy infant and presented no other congenital abnormalities. The right eye was to all appearance normal. Filling the left orbit and protruding from between the lids which could not be closed, was a red slightly oedematous mass. It was irregular on the surface and covered by the epithelium of the conjunctiva except where it was exposed in the palpebral aperture, where it had started to ulcerate. There was no enlargement of the preauricular gland and no eye could be seen. On March 13 the orbital contents were eviscerated, leaving the eyelids in position. The child made a good recovery, the wound granulating and healing over with epithelium.

On June 16, 1908, the child returned to the hospital with a large recurrent mass filling the entire orbit and bulging forward the upper lid and protruding between them. Complete evisceration of the orbit was performed, the child making a good recovery. After the operation the patient attended the hospital for four weeks, but since then has been lost sight of.

The contents of the orbit submitted for examination was hard-

ened in formol. The eye, which was embedded in the upper part of the tumor, had been cut open and the sclerotic divided posteriorly in several places. It appeared about the normal size, the cornea, anterior chamber, iris, ciliary body and lens being normal. The condition of the posterior part of the globe could not be made out, but there was no evidence of any cystic protrusion therefrom. No definite orbital structure could be recognized, the whole being involved in the tumor. It was composed of medium-sized spindle cells. The walls of the vessels within the tumor were composed for the most part of its cells. Hemorrhages had taken place into the growth in many situations. The recurrent tumor, examined microscopically, exhibited the same characteristics as the primary tumor except that the hemorrhages were not so numerous.

The typical microscopical appearances, together with the recurrence of the disease, led him to believe it to be a spindle-celled sarcoma of the orbit developing during intrauterine life. He had been able to discover the records of two similar cases which exhibited much the same characteristics.

Messrs. A. P. L. Wells and M. S. Mayou read a paper on lymphosarcoma of the lachrymal gland.

They pointed out the want of proper classification of tumors of the lachrymal gland. They divided them into those derived from the epithelial, the connective and the lymphoid tissues. The case which they brought before the society was one of the latter type.

*Case*—M. A., female, æt. 66, was admitted to the Central London Ophthalmic Hospital on January 11, 1909. She was a strong, healthy woman, no anaemia, no glandular enlargement. There was nothing in her previous history of note.

She complained of a swelling which she had noticed for a considerable time at the upper and outer part of the left orbit in the situation of the orbital portion of the lachrymal gland. The surface of the swelling was somewhat irregular and about the size of a large walnut. It was soft, almost fluctuating, rounded in outline, and moderately freely movable.

From January to April whilst under observation it gradually increased in size and on admission into the hospital, on April 8, there was, in addition to the above symptoms, displacement of the eye downwards and the tumor seemed to have become slightly



attached to the margin of the orbit which seemed thickened. There was no enlargement of the salivary or lymphatic glands and no signs of dissemination.

On April 9, an incision was made over the tumor, which was found to be encapsuled except in one situation, where it was ruptured. After removal it was seen to be about the size of a walnut and surrounded by a capsule which was evidently formed from the original capsule of the gland. This was composed of fibrous tissue and was much thicker in some positions than in others. In some situations it was much infiltrated by the cells of the growth, whilst in one the tumor had penetrated it.

The tumor consisted of round cells about the size and shape of an ordinary lymphocyte, and showed no signs of degeneration although at some places the cells were more darkly stained and packed together than others. Mitosis was not marked in the cells.

The vessels in the tumor were of two kinds. Some, which were evidently new, were composed of a single layer of endothelium, or, in some situations, of the cells of the tumor itself: the others, which were generally situated in the remains of the trabeculae of the gland and were probably the original vessels supplying it, had normal coats which were somewhat thickened.

In the literature they had been able to find eight similar cases which exhibited much the same characteristics. The points about the tumors were the late age at which they occurred—all the patients being over 38; their slowness of growth, 3-4 years, and the absence of glandular enlargement. They also pointed out that these tumors should be differentiated from other orbital sarcoma invading the gland, and from lymphoid growths such as are found in chloroma and lymphadenoma.

C. DEVEREUX MARSHALL.

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## SECTION OF OPHTHALMOLOGY—COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting November 18, 1909.

DR. WILLIAM ZENTMAYER, Chairman, Presiding.

### Chronic Sympathetic Ophthalmitis

Dr. Frielis cited the case history of an iron-worker, aged twenty years, who had been struck in the left eye on October 28, 1908, by a piece of steel. The wound healed, but one month after

the injury inflammation ensued, for which he was treated by a physician in an adjacent city. On March 9, 1909, he sought treatment at the Wills Eye Hospital. During his treatment here the injured eye induced inflammation in the sound eye, and was enucleated by Dr. Posey. The patient was discharged the latter part of June. Subsequently he came under the observation of Dr. Friebs, and at this time the eye presented the following conditions: Decided corneoscleral congestion, photophobia, tenderness in the ciliary zone, tension about normal, complete posterior synechia, and the lens was somewhat opaque from the plastic exudates of the iridocyclitis. The iris was atrophic, and in more than one-half of its circumference was distended in the form of a vertical crescent by fibrinoplastic exudates. The central portion of the lens was clear, and vision was about 15/200. The fundus presented a hazy appearance, but no abnormalities were present aside from a small atrophic patch near the upper edge of the disc.

In view of the above conditions, Dr. Friebs gave an unfavorable prognosis, but under a course of mercurial inunctions and sweats, with the internal administration of potassium iodide in ascending doses, which was subsequently replaced by sodium salicylate, and the local administration of hot compresses, atropine, and dionin, the condition began to improve, and at the expiration of five days the vision had risen to 15/100. The improvement was progressive until six weeks ago, when normal visual acuity was obtained.

Dr. Friebs thought that this undoubted case of chronic sympathetic ophthalmitis having recovered normal vision, despite the serious pathological changes which had taken place in the ciliary region, iris, and lens, might be considered restored to permanent usefulness.

Dr. Posey said that he had had this patient under his care for five or six months at the Wills Eye Hospital. At the time of admission, both eyes were the seat of a violent iridocyclitis. After consultation with some of his colleagues, the removal of the exciting eye, *i. e.*, the left, was decided upon, as there was so much exudation in the pupil and the iridocyclitis was so great that it seemed most unlikely that any procedure could ever be practised which would restore any degree of vision to the eye. The enucleation seemed to exercise a favorable course upon its fellow, for the cyclitis lessened,

and after months of much the same treatment as Dr. Friebis has outlined, vision was brought to 5/12.

While the patient was under observation, it was interesting to note the development of the small cysts in the iris, which were the products of the iris brombé.

Dr. Posey was unable to share with Dr. Friebis his favorable views regarding the ultimate outcome of the case, as he feared that the almost complete posterior synechia and the already quite marked capsular haze might develop conditions which would be most deleterious to sight.

Dr. Friebis believed that in view of the complete subsidence of all inflammatory symptoms and the restoration of normal vision, and that by performing in addition an iridectomy to reëstablish the communication between the anterior and posterior chambers, his conclusion as to the permanent usefulness of the eye was warranted.

### **Intense Neuroretinitis Probably Due to Chlorosis.**

Dr. Wm. Campbell Posey exhibited a girl, aged fifteen years, whose left eye was the seat of an intense neuroretinitis, the edges of the nerve being everywhere obscured by a dense mass of exudate. Several small hemorrhages could also be observed lying on the mass. The retinal veins were broadened, tortuous, and beaded. There was a mild neuroretinitis in the right eye. The patient had always been fairly healthy. Menstruation, however, had been very irregular and her bowels extremely constipated. There had been no headache, with the exception of a short interval preceding the loss of sight. Examination of the urine was negative. In the absence of other causes, Dr. Posey considered the neuroretinitis in all probability to have been induced as a consequence of chlorosis, as the blood count showed hemoglobin, 70 per cent; erythrocytes, 4,170,000; leukocytes, 12,600. Dr. Posey stated that the case was not dissimilar to one which he had reported before the American Ophthalmological Society in July last.

Dr. Emory Hill (by invitation) read the case history of the patient.

Dr. de Schweinitz agreed with Dr. Posey that optic neuritis, or at least papilledema, was occasionally caused by simple anemia and by chlorosis, and referred to the case history of a patient of his own with extensive choked disc that had disappeared under the

influence of the administration of the various preparations of iron. He referred to Mr. Risien Russell's recent communication on the significance of optic neuritis and the doubt which this author had cast upon the relationship of simple anemia to the production of choked disc, but felt, while the cases must be unusual and the etiology not a common one, that it none the less existed, especially as we know that under similar circumstances serious lesions, for example, thrombi in the sinuses of the brain, can arise. Dr. de Schweinitz also pointed out that the mere presence of anemia, even in the absence of other symptoms, could not be definitely stated to be the cause of the optic neuritis in question, inasmuch as intracranial lesions, notably brain tumor, are sometimes entirely free from localizing symptoms, and that, for example, in tuberculosis, an anemia might be present and yet the choked disc be due to a tuberculous process in the brain.

Dr. Walter L. Pyle stated that several years ago, in preparing an editorial on the relations of chlorosis to optic neuritis, he was struck by the numerous cases of so-called "inoperable brain tumors" with choked disc, in which subsequent blood-examination showed marked evidence of profound blood dyscrasia. After administration of proper ferruginous treatment, these patients improved, with associated marked subsidence of the neuritic swelling and partial restoration of vision. The significant point in this connection is the advisability of careful blood-study in all cases of choked disc, either unilateral or bilateral. As he recalled it, the relative papers that he had reviewed had reference to chlorosis, and not to pernicious anemia.

Dr. T. H. Weisenburg stated that he would like to call the attention of Dr. de Schweinitz to a case which he had seen for him in Dr. Weisenburg's nervous wards in the Philadelphia Hospital several years ago. He had no doubt that Dr. de Schweinitz would recall this case. It was that of a man, aged thirty-eight years, who had a sudden gastric hemorrhage which was followed by blindness and some spinal cord symptoms. Dr. de Schweinitz made the ocular examination, and found an optic neuritis which subsequently developed into secondary optic atrophy. Since then the spinal cord symptoms have disappeared, but the ocular phenomena are still present. The blood examination at that time showed a grave anemia. Dr. Weisenburg had never seen, however, optic neuritis

occurring in pernicious anemia, and he agreed with Dr. de Schweinitz that such a condition probably does not occur.

Dr. H. F. Hansell stated that the reference by Dr. Weisenburg to the patient in the Philadelphia Hospital reminded him of another patient in the same hospital. It was a boy, aged sixteen years, who had been brought to the hospital from a ship which had just arrived from a foreign country. He had pernicious anemia with double optic neuritis and numerous retinal hemorrhages. By repeated examinations of the feces it was learned that the cause of the disease was the hook worm. Under appropriate treatment the cause was permanently removed and the patient recovered from the anemia, optic neuritis, and retinal hemorrhages.

Dr. Posey replied that there had always been a doubt in his mind as to whether such extensive eye changes could be due to an anemia pure and simple. The case which he had presented had irregular menstruation and suffered from extreme constipation, and he thought it not unlikely that these two conditions, in conjunction with the anemia, had doubtless produced some intoxication, with the true nature of which we are as yet unacquainted.

#### **Case of Mucocoele of the Frontal and Ethmoidal Cells Operated Upon by Orbital Incision.**

Dr. Posey also exhibited a boy on whom he had recently opened the frontal and ethmoidal cells by means of the Arnold Knapp operation. He showed the case chiefly to insist upon the desirability of closing the orbital wound after sufficient drainage had been obtained through the frontal and ethmoidal cells, by means of a drainage tube, which was held in position by means of a strip of adhesive plaster passed through the upper lip. This case had previously been operated upon by Dr. Parker, in Dr. Posey's absence, one end of the drainage tube having been permitted to project from the orbital incision. After this tube was removed, a mucocoele formed at the inner angle of the orbit, which was the size of a small egg and resembled a hernia cerebri.

#### **Hydrocephalus with Ectopia Pupillae.**

Dr. Samuel D. Risley and Dr. T. H. Weisenburg presented for study a Slavic boy, aged five years, blind in both eyes, with enlarged skull and a bony tumor over the anterior fontanelle. Although a sturdy appearing boy, there was a history of continuous ill health, commencing with alimentary disturbance in infancy.

measles during first year, followed by enlarged submaxillary glands; later, by a symptom complex suggestive of intracranial disease, probably hydrocephalus.

Dr. Risley said that in July, 1909, the boy became almost suddenly blind and the following September had five convulsions in one day. He was brought to the Wills Hospital in October, where he was first seen by Dr. Risley. The anterior fontanelle, which was unusually large, had remained open much longer than usual, but at the present time was the site of a large bony prominence which Dr. Risley suggested had probably finally closed by the formation of a Wormian bone, forced during its formation upward into the tumor-like mass, by intracranial pressure. There was complete atrophy of both optic nerves, but the ophthalmoscopic picture was that of atrophy following choked disc, the veins being still large and tortuous.

The right pupil was displaced upward and inward when first observed, but this was intermittent, since at a later observation it was found quite normally situated and the left displaced. He did not, therefore, regard it as true *corectopia pupillæ*. Both pupils responded to light, but would dilate irregularly again even while under exposure to strong light. He regarded the case as one of external hydrocephalus with involvement of the ventricles. The enlarged head, the general demeanor of the child, the bony elevation over the anterior fontanelle, the papilledema with consecutive atrophy and the pupillary phenomena, as well as the clinical history, he thought could be reasonably explained only on the theory of a uniform, long-maintained, intracranial pressure caused by effusion not only into the ventricles, but into the enveloping membranes of the brain. When exhibited to the section the child had been treated by inunctions through the agency of a mercurial bandage which had been worn for more than two weeks. Under this treatment the headaches had disappeared, the general health had markedly improved, and the dread of the ophthalmoscopic mirror suggested increased perception of light.

Dr. T. H. Weisenburg stated that the case in brief was one of internal and external hydrocephalus with failure of closure of the anterior fontanelle, with a consequent protrusion which calcified. There was also a history of general convulsions, but there was no weakness in any of the limbs. There was, however, a general increase of tendon reflexes. The most interesting part of the case,

however, was the displacement of the pupil. When seen by Dr. Weisenburg both pupils were displaced up and in, the right more so. Subsequent examinations showed that the displacement varied, for in the last examination the left pupil was dilated more than the right. At no time in Dr. Weisenburg's examination were the pupils irregular or larger than normal. Their reactions, according to Dr. Risley, were slightly diminished.

Ectopia pupillæ is a rare phenomenon, and very little is known of its cause. It has been shown by the experiments of Piltz that by stimulation of the branches of the ciliary ganglion or short ciliary nerves the pupil could be displaced in any direction, but the important point is that when this is done they are irregular, differing from the round pupil described in the above case or in other similar cases.

Recently Dr. S. A. K. Wilson (*Brain*, 1906, p. 524) observed periodic ectopia in three cases of tumor or lesion of the third ventricle. Dr. Weisenburg had observed ectopia also in tumors of the pons and in cases of internal hydrocephalus.

There are only three possible causes of the phenomenon: (1) Malformations of the iris; (2) a disturbance of the apparatus concerned with dilatation or contraction of the pupil, which lesion may be either peripheral or (3) central.

Malformations of the iris have been well described by Best, who states that they may occur unilaterally or bilaterally and are associated with disturbance of the lens or iris and the pupils are irregular.

Should the peripheral mechanism which controls the action of the pupils be involved there would be irregular pupils such as have been described by Piltz. Therefore, this explanation can be excluded. There remains then only the theory that a central lesion causes this disturbance. In the cases described by Wilson there were, besides the ectopia, disturbances in the nucleus of the third nerve, and if it is presumed that the constrictor and dilator fibers have their central innervation within the third nucleus, this may be an adequate explanation. In the present case, reported with Dr. Risley, there is probably a dilatation of the third ventricle, and a similar explanation may here be given.

Dr. Walter L. Pyle stated that from the description of Dr. Risley's case it seems particularly one in which craniotomy would have been of advantage. When a student at Great Ormond Street

Hospital, London, he saw several similar cases in the service of Sir James Barlow, in which the operation of craniotomy was followed by marked improvement of the visual, mental, and constitutional symptoms.

Dr. de Schweinitz, referring to Dr. Risley's unusual and interesting case, asked Dr. Weisenburg whether the pupil phenomena which this child had presented belonged to the same class as those which had often been described in connection with specific infections in which the pupil was more or less displaced and sometimes pointed, to some of which phenomena Berger, Sachs, and others had called attention.

Dr. de Schweinitz, speaking again, and referring to Dr. Risley's statement that his patient's pupils were not always round, but had on one occasion at least assumed an ovoid form, thought that this indicated that they belonged to the same class to which he had previously made reference, and if he was not mistaken, one author, because such displaced pupils assumed different shapes, had referred to them as amoeboid pupils. He did not doubt that Dr. Weisenburg's theory was the one which most satisfactorily explained the phenomenon, although he thought it was not impossible that a peripheral action of the toxin, whatever the toxin might be, on the iris fibers themselves, or on the peripheral distribution of the pupil nerves, might be responsible for the condition which had been described.

As to the question of Dr. de Schweinitz whether the ectopia described in such a case differs from the ectopia of a peripheral lesion, Dr. Weisenburg thought that there was a difference, because in peripheral lesions the pupils nearly always are irregular, but he agreed with Dr. de Schweinitz that inasmuch as the same mechanism controlled the reactions of the pupil, whenever disturbance of the pupil occurred there must be a disturbance in some portion of its reflex arc.

### **Cyclodialysis.**

Dr. Walter L. Pyle referred to the history of cyclodialysis and gave the technique of this procedure in detail, and after dealing with the after-treatment, complications, effects of the operation, and the manner in which reduction of intra-ocular pressure was effected, spoke more in detail of the indications. He stated that cyclodialysis was technically very simple, and that it was less radical and less dangerous than an iridectomy, but that it was not reasonable to expect its performance to be followed by very successful results in



cases in which an iridectomy was not feasible, or had already been done without effect. To fairly judge the efficacy of any surgical procedure and give definite percentages of relief and failure, it must be the first and elective operation. For this reason all statistics to date regarding the true value of cyclodialysis were neither reliable nor remarkably significant. In conclusion, he referred to the recent American literature of the subject, and cited the reported cases of Denman, Wilder, Brown, and Knapp.

Dr. de Schweinitz stated that his experience with cyclodialysis had been an extremely limited one, and that he had performed the operation only seven times—three eyes with secondary glaucoma, the original disease having been an iridocyclitis, and four eyes with absolute glaucoma. The operation on one of the eyes with secondary glaucoma proved to be unsuccessful, and iridectomy was subsequently required. In the other cases of this type of glaucoma, so far as he knew, the operation had reduced the tension and that it had remained reduced for the period of time (a short one, however, about two months) during which the cases were under observation. All of the operations for absolute glaucoma, the eyes being blind and the operations simply having been done for the purpose of relieving increased tension, irritability, and pain, had proved to be successful in the sense that these symptoms were relieved by the operation. In one of the eyes of this series there had been some return of increased tension, but no return of pain. Five months was the longest period of time during which he had had the cases of absolute glaucoma under his observation. No complications had arisen, and he had not thought it necessary to close the conjunctival wound with a suture.

Dr. Posey said that he had performed the operation on three cases of chronic glaucoma, and that he had remarked a lessening in the intraocular tension a short time after the operation, which had been maintained for the month or more during which the patients had remained under observation following the procedure. He had, however, not seen the patient of late, and was unaware of what the ultimate results of the operation had been. He was inclined to think, however, that the operation was chiefly indicated in eyes blind from glaucoma which were painful and irritable. He did not think the operation justifiable in cases of chronic glaucoma where the field was much compromised, as had been urged by some, for cyclodialysis has been known to be followed by hem-

orrhage in the macular region. Furthermore, he was convinced that the persistent and intelligent administration of myotics in this class of cases was productive of more good than any form of operative interference.

Owing to the small size of the wound, Dr. S. D. Risley thought a conjunctival suture was quite unnecessary and prevented an additional source of infection.

Dr. Zentmayer stated that he had performed the operation upon four eyes in which iridectomy seemed to him to have been contra-indicated, either because of the advanced stage of the glaucomatous process or because of the technical difficulties. The results he had to report were only the immediate ones. In one eye vision was improved from L. P. to 2/60, and the field from L. at fixation to a 10-degree form field. T. reduced to N. In one eye V, improved from fingers at 1 foot to 5/15, and field from fixation to 15 degrees. T. reduced to N. In one eye V, improved from fingers at 2 feet to 5/35, and the field from 8 degrees to roughly 40 degrees. T. reduced to N. In one eye conditions unchanged except subjectively. The last case was one of subacute attack in a sightless glaucomatous eye. Cyclodialysis was performed because the patient refused enucleation. Although neither the T. nor the congestion was improved, the patient claimed to have been entirely relieved of the intense pain from which he had been suffering.

Dr. Zentmayer said that he had used the conjunctival suture for the same reason that he would employ it in a case of scleral puncture to afford protection from infection by bringing over it a conjunctival flap.

In closing the discussion, Dr. Pyle said that he had performed cyclodialysis in three instances and had purposely omitted mention of these cases on account of their recent date. He hoped later to publish the final results. His idea in presenting his paper was to set forth the present status of the operation, and to describe the manner in which he thought it should be performed. He did not share the early enthusiasm of Meller. As to the advisability of omitting the conjunctival suture, he thought the matter of not sufficient import to merit discussion. He believed the slight advantage more than offset the trivial objections, and said he would continue to use the suture.

### **A Clinical Note on the Relationship of Certain Forms of Skin Disease and Choroiditis.**

Dr. de Schweinitz thought that this relationship might appear in one of three ways: First, the skin lesion may be the origin of a pathogenic infection which is transferred to the choroid. Second, the skin lesions and the choroiditis may be coincident and probably due to the same toxemia or infection. Third, the skin lesions and the choroiditis alternate, that is, at one time the patient has eruption of the skin, which disappears, to be followed at another period by a choroiditis, which, in turn, subsides, and so they replace each other. All reference to the first of these classes was omitted, but Dr. de Schweinitz described two cases of relapsing choroiditis associated with extensive acne eruption, and several cases of the third group in which attacks of eczema and choroiditis alternated. In none of these cases could the presence of syphilis or tuberculosis be established. Dr. de Schweinitz was well aware that such cases as he had detailed by no means proved the relationship to which he had made reference, but it seemed to him as if this relationship of eczema, acne, and choroidal disease was sometimes more than a coincidence. He believed that if it is admitted that an intestinal intoxication may occasionally be interpreted in an effort of elimination by the development of a skin disease, for instance, one of those which have been named, it is not beyond the limits of probability that it may have a similar interpretation in the development of choroiditis or uveitis, and that sometimes the toxin is responsible for the skin lesion and on other occasions in the same patient for the uveal tract affection.

Dr. S. D. Risley stated that such an association of a skin and ocular affection had not been thought of by him, but he agreed with Dr. de Schweinitz in the interpretation of the phenomena.

### **Bilateral Optic Atrophy, Associated with Enlargement of the Accessory Sinuses.**

Dr. Langdon cited the case history of a boy, aged sixteen years, who had been employed in a leather factory, and who for the last fifteen months had suffered from headache, nausea and vomiting. Eight months ago the vision became blurred, and he sought treatment at the Stetson Hospital, where it was found that the vision of the left eye had sunk to light perception, due to primary optic atrophy, and the right nerve was seriously affected. A course of mercury, iodides, and sweats failed to check the process, and the

vision was lost. There was no involvement of the central nervous system and no signs of neuritis or papilledema. The fields were not taken.

The patient first came under the observation of Dr. Langdon in August, 1909, at which time the nerves were absolutely atrophic, the margins clear-cut, the lamina visible, and the retinal arteries small. No other fundus changes were noted. The family history was good. Thorough examination failed to detect any involvement of the central nervous system, or any of the internal organs. There were no nodes or rhagades; the teeth were not of the Hutchinson type, but were irregular and suggestive of rachitis. The patient was undersized. A nasal examination failed to reveal any involvement of the accessory sinuses. Skiagrams showed the sella tursica to be normal, but revealed a marked enlargement of the sphenoidal and frontal sinuses, but in view of the absence of any inflammatory condition affecting these sinuses, this enlargement was attributed to an overaction of the osteoclasts.

Dr. Langdon, having excluded consecutive atrophy of the nerves, and in view of the fact that the family history was negative and that anti-specific treatment had given negative results, concluded that the atrophy was dependent upon direct pressure on the nerves or tracts, and thought it most likely that a tumor of the frontal lobe was the underlying etiological factor.

Dr. Holloway stated that he thought it was most unfortunate that the visual fields had not been studied in the early stages of the affection. He referred to Oppenheim's statement that growths of the hypophysis and its vicinity may produce a bilateral constriction of the fields or blindness affecting one eye, and that bitemporal hemianopsia was not the type usually produced.

He thought it probable that a growth of some character was responsible for the atrophy.

Dr. S. D. Risley thought that it was impossible, with any degree of certainty, to determine the actual cause of the atrophy, and felt that this case must be included with the long list of cases of this type that were etiologically obscure.

### **Monocular Hemianopsia Due to Ethmosphenoidal Disease.**

Dr. Frederick Krauss presented the history of a case of Monocular Hemianopsia due to Ethmosphenoidal Disease. The patient, a female, aged forty-eight years, had suffered for many years on account of supraorbital headache and inability to breathe through the nose. Examination disclosed frontal and ethmoidal disease on both sides. The ethmoidal cells were opened and the

frontal cell washed frequently, with improvement for four months, when visual disturbances were noted by the patient in the right eye. This was transient, but recurred later, when a central scotoma could be mapped out, which quickly merged into a superior hemianopsia with the field slightly tilted to the temporal side. The x-rays showed an opaque area anterior to the sphenoidal bone, the latter being apparently unaffected. The opaque area proved to be a very large posterior ethmoidal cell, with a pale lining, containing no pus. The sphenoid was opened and a small amount of mucopus discharged. The following day there was a very free discharge of very offensive pus from the ethmoidal region. One week later the field had recovered more than half its former defect, with steady improvement since.

In the early stage the use of the *Bacillus bulgarius* culture had been followed by an aggravation of the inflammatory symptoms, but no ill effects followed its use in the later stages.

Dr. G. Oram Ring asked the relation that the use of the *Bacillus bulgarius* culture (Massolin) bore to the amelioration of the sinus inflammation.

Dr. Krauss, in reply to Dr. Ring, stated that he thought the use of the culture was without any effect, and that such had been his experience in several other cases in which it had been employed.

T. B. HOLLOWAY, M. D., Clerk.

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## CHICAGO OPHTHALMOLOGICAL SOCIETY.

Meeting of February 14, 1910.

Dr. WILLIAM A. FISHER, President, in the Chair.

### Bilateral Exophthalmos.

Dr. William H. Wilder: This man, a railroad employe, was in perfect health and had had perfect sight until about five years ago, when he noticed a beginning prominence of the left eye. A month later the right eye became prominent. There was no pain or discomfort. The prominence increased in degree until the present condition ensued. There is a marked protosis and the conjunctiva is swollen from the exposure. There is no injury of the cornea. Two weeks ago vision in the left eye was 20/70, in the right eye 20/120, and it is practically the same today. The veins of the orbit are swollen and varicosed; the lachrymal glands are palpable. In the left eye and also in the right is a mass which feels not unlike a gland. In the right eye is a beginning papillitis, with consider-

able swelling of the optic nerve head and a few blocks of degeneration in the nerve. The veins are about twice as large as the arteries. There is no swelling of any of the glands about the face; no pulsation; no bruit; so that pulsating exophthalmos can be ruled out. There is no edema of the face, so that there is no thrombosis of the cavernous sinus. The nose and throat are negative. The accessory cavities are negative. Transillumination shows the maxillary antrum and frontal sinus normal, although there is a little dullness in the upper part of the maxillary antrum, probably due to the thickening of the lower lids. A front view skiagram shows a prominence of the inner medial orbital wall, apparently as if the ethmoid cells are pushed out into the orbit. There is evidently some sort of tumor mass in each orbit so placed as to obstruct the venous circulation and make pressure on the optic nerves.

It has been suggested that this is a case of leontiasis osseum, but if so it is not more than a localized leontiasis, because the skiagrams do not show any enlargement of any of the other bones. Or is it a peculiar and rare form of chloroma, or an atypical form of leukemia? In thirty-six such cases on record there is evidence of leukemia, but a differential count in this case is negative. It may be a case of Mikulicz's disease, but the absence of enlargement of the parotids and sublinguals makes this theory untenable. The case is probably one of enlargement of the inner wall of the orbit.

The only treatment pursued is the alterative one. The man is taking sixty grains of potassium iodide three times daily. Holding the head down or pressure on the eyeballs does not increase the exophthalmos.

Dr. Beard suggested that the case might be one of slow-growing sarcoma, originating from the median sinuses of the head.

Dr. Cassius D. Wescott was reminded of a case he saw more than sixteen years ago. The patient presented the same appearance as Dr. Wilder's patient did, and on opening the lids widely he found numerous tumors. There was one tumor over the inner canthus of the right eye about the size of the end of the thumb. It was anterior to the palpebral ligaments. Dr. Wescott removed from each orbit a number of small lymphoid tumors, which were examined by Drs. Hektoen and Le Count, and pronounced simply lymphoid tumors, because no other diagnosis could be made. About that time Dock, of Ann Arbor, reported a similar case, but he could not recall his final conclusions. He thought that the exophthalmos in Dr. Wilder's case was probably due to such similar tumors, be-

cause palpation of the masses reminded him very strongly of his case. His patient lived a number of years after the operation and there was no recurrence of the tumors.

### **Glaucoma.**

Dr. Henry Gradle: This child was first seen in June, 1908, with secondary glaucoma of the left eye, due to partial corneal staphyloma. Iridectomy gave complete relief for three days, then all the symptoms returned. Cyclodialysis was performed, with complete success. The corneal staphyloma flattened, but has not receded entirely. Vision is about two-thirds, with correction of a high astigmatism. The other eye was totally staphylomatous. In September, 1908, I did a Kuechler operation, letting out the lens. Still tension and bulging persisted. In May, 1909, I did a cyclodialysis, with decided improvement. Tension was reduced, but is still plus. However, the eye has retained its shape.

This gentleman lost his right eye almost entirely from simple glaucoma. On November 30 I did a cyclodialysis, partly to see how he would react, on account of the left eye, which was beginning to be glaucomatous. In ten days tension went down. The eye became distinctly soft and is now normal in tension. There are no subjective symptoms of glaucoma in the right eye. The left eye is functionally perfect, but the tension is plus, the pupil does not react and there is a beginning excavation. I did a cyclodialysis on January 20, and in ten or twelve days tension was little more than plus doubtful, and went to normal or even distinctly below. Since then it is at least normal, possibly doubtfully above, but gets subnormal under eserine, while eserine before operation made him more comfortable, but never gave a minus tension.

This lady has an iridectomy done for simple glaucoma of the right eye seven years ago, with practically arrest of the disease until now. For the last few months she has had slight symptoms of glaucoma in the same eye. The left eye began with obscurations a few months ago, tolerably well controlled by eserine. Cyclodialysis was done on January 14 on the left eye, and the woman is subjectively more comfortable. She has no obscurations; tension is distinctly minus under eserine. She has practically perfect vision under low illumination.

### **Ophthalmoplegia Externus.**

Dr. William A. Fisher presented an interesting case of this condition.

**Case of Pseudo-Glioma.**

Dr. Willis O. Nance: Girl, ten years old; presents in right eye what for a better diagnosis might be termed a pseudo-glioma. On dilatation, a whitish, yellowish mass can be seen in the vitreous chamber, occupying about one-fifth of its contents. She came to the Illinois Eye and Ear Infirmary on August 12, 1908, on account of a convergent strabismus. Her family history is negative. She had an attack of rheumatism when one year old; pneumonia at five. It was first thought that the case might be one of true glioma. There has never been dilatation of the pupil or increase in tension. The patient has been under observation for about eighteen months. There has been no increase in the size of the mass. The eye is slightly smaller than the other eye. Probably this is an old tuberculous process or possibly it is a metastatic growth. Vision is nil. Transillumination is negative. The tumor mass is distinctly vascular at one point.

Dr. Oscar Dodd thought that, considering the duration of the condition, it would hardly seem to be a glioma. He recalled a case of glioma with minus tension that gave every sign of a pseudo-glioma, although the pathologic report was positive. Long duration without marked increase in size and the fact of its vascularity led him to regard Dr. Nance's case as being a tuberculosis.

Dr. E. J. Gardiner saw a case that presented the same picture as this one following an injury. The man was hit in the eye with the brim of a hat. The eye became painful and two weeks after the accident he showed a tumor in the vitreous, with a few blood vessels spread over it. It increased in size for a while, and then became stationary, finally presenting the same picture as did Dr. Nance's case.

Dr. Henry Gradle saw a case which was identical with Dr. Nance's and which he had seen for the first time twelve years previously. In 1897 a boy of twelve was blind in one eye. There was no pain or discomfort, but a white mass was clearly outlined, somewhat globular in shape, with vessels running over it. After consideration, it occurred to Dr. Gradle that it might be a case of cysticercus, and he advised removal of the eyeball, but the advice was not acted on. Twelve years later the patient returned and the eye was in exactly the same condition as when first seen. The whitish tumor with blood vessels running over it was still plainly to be seen. There was some iritis and some synechiae. In the other eye was a very anomalous form of retino-choroiditis, which made the



man practically blind. The question is: What is the connection between that and the other eye?

### **Case of Hess' Operation for Ptosis.**

Dr. Mortimer Frank: The result in this case is excellent—better in the right than in the left eye, probably due to a tightening of the sutures. The ptosis was complete. There was no power in the frontalis. The deformity is congenital. His mother has a partial ptosis and the mother's father also had a ptosis. The late Dr. Hietz attempted an advancement of the levators on both eyes, without any result.

### **Trachoma.**

Dr. Thomas Faith: The patient suffered from trachoma for seven years, during which time he was treated continuously without avail. Four weeks ago excision of the tarsus was advised. At that time vision was shadowed in the right eye and ability to count fingers at ten or twelve feet in the left eye. The excision was followed by no reaction, and the patient made a prompt recovery. Vision today is fingers at twelve feet in the right eye and 20/100 in the left eye. Instead of leaving the knots of the sutures in the cul-de-sac, they were brought through the lids and then over a strip of gauze.

Dr. Beard puts in four sutures, tying the two outer ones on the under surface of the lid and bringing the two central ones out through the lid margin close together. He considers that most of these combined excision are made because of gelatinous degeneration of the tarsus, although Dr. Faith stated that there was none in his case. He was rather inclined to believe that degeneration was present, because of the good result obtained.

Dr. H. W. Woodruff has had some experience with this operation and has found that there are two advantages to be obtained. It not only improves the trachoma, but it relieves the ptosis. In one case he secured a particularly good result. A young girl with chronic trachoma had never had any treatment. Only one eye was affected and there was a pronounced ptosis. She had some pannus and some opacities of the cornea, but all she wanted was to have the ptosis relieved. He performed this operation with a most gratifying result. When the refractive error was corrected, she had useful vision. He has never seen any bad results from this operation, although occasionally there is some reaction.

Dr. Faith, in closing, said that he had used four sutures in

this case, bringing them all out through the lids and tying them over gauze. He has done the operation twelve times, but has not limited himself to cases of degeneration of the tarsus. He has employed it in every case of old trachoma that resisted ordinary measures. He regards it as a useful and safe procedure. In one case he had a recurrence in one eye. The trouble was in the cul-de-sac. The trouble over the tarsus amounted to nothing. It was the first operation of this kind he ever did, and perhaps the technic was faulty. The only thing to be careful about is to leave a little strip of cartilage along the border of the lid to preserve its shape. In one case he had used dionin for a long time to clear up the cornea, and he had also used jequiritol, and finally adopted this procedure, and the man, who has been unable to read for thirty years, read a newspaper in four or five months.

### **Wounds in the Ciliary Region.**

Dr. George F. Suker: A boy struck his eye on the corner of a step, causing a corneal wound through which the iris prolapsed. A flaxseed poultice was applied and the boy was not seen by a physician for several days. Instead of enucleating the eye, Dr. Suker did a grafting operation—a modified Schoeler. After six months the globe is in good condition and the patient has light perception. However, there is a phlyctenular trachoma on the conjunctiva flap.

The second patient had a similar injury. The upper lid was split and there was a wound at the sclero-corneal junction, through which the iris, ciliary bodies and a portion of the choroid were prolapsed. There was escape of some of the vitreous. An operation similar to that done in the first case was performed, but the patient later developed a corneal ulcer, necessitating a secondary operation to prevent perforation of the cornea. He is now tattooing the cornea, in order to get a good cosmetic result.

### **Tuberculosis (?) of the Lid.**

Dr. Major Worthington: About ten months ago the patient noticed a small pimple on the right upper eyelid, which gradually increased in size until it involved quite a portion of the lid. It has been growing slowly since then, breaking down and healing partially. It has partly destroyed the margin of the lid. At the age of fourteen the patient began to have abscesses in the neck and still shows numerous scars. These abscesses discharged for twelve years. A specific history is denied and the diagnosis lies between

epithelioma and tuberculosis; however, the Moro tuberculin test was positive. Microscopic sections showed merely a round cell infiltration.

Dr. O. Tydings referred to a case of tuberculosis beginning in the right lower lid and extending across the bridge of the nose which he treated with tuberculin injections, and which has gone on to complete recovery. The patient has not had any treatment for the past few months. A dermatologist in this city made a diagnosis of lues, but under specific treatment the patient got worse. She responded to the tuberculin test and she recovered entirely under the tuberculin treatment.

Dr. Gardiner thought that this was a case of lupus.

Dr. E. V. L. Brown said that the scars in the neck confirmed the tubercular nature of the trouble. At the Illinois Charitable Eye and Ear Infirmary quite a number of cases of blastomycosis have been seen, and there is a possibility that many of these cases go unrecognized. However, the scars in this case resemble neither those of blastomycosis nor lupus.

Dr. Suker's experience has been that in the employment of the Moro ointment, the full strength, diluted with fifty per cent lanolin, is used, and therefore lanolin should be used on the opposite side of the chest, because lanolin alone often gives a typical Moro reaction. The Moro reaction does not positively prove that the patient has active or even latent tuberculosis, but there may be a skin reaction of tubercular nature, although whether this is positive or negative remains to be seen. He suggested the use of Koch's tuberculin, noting the results following its use.

### **Melanosarcoma.**

Dr. J. B. Loring called attention to a small pigmented growth on the left earuncle which is slowly increasing in size. There have been no subjective symptoms. The growth first appeared about three or four months ago, and is extremely suggestive of melanosarcoma.

Dr. E. V. L. Brown stated that many of these tumors are now being looked on as epitheliomas rather than melanosarcomas.

### **The Operative Treatment of Chronic Glaucoma Other Than by Iridectomy.**

Dr. Charles H. Beard: Operative treatment of glaucoma began about 80 years ago with McKenzie's posterior sclerotomy.

Thirty years later von Graefe did his first antiglaucomatous iridectomy. The operative measures which have followed are intra-bulbar and extra-bulbar. To the intrabulbar operations, exclusive of iridectomy, belong the various forms of sclerotomy (anterior and posterior), intra-ocular myotomy, and their numerous modifications. The filtration cicatrix was a modification of the anterior sclerotomy conceived by DeWecker in 1865. From this Panas in 1883 evolved his operation of ouletomie. In all of these operations paracentesis is doubtless the therapeutic factor and not the method of making the incision. They always give immediate and sometimes permanent relief.

Other forms of intra-bulbar operations involve both iris and sclera. They are combinations of sclerotomy and iridectomy, (sclero-iridectomy) Terson; sclerotomy with incision of the iris (sclero-iritomy) Nicati; the internal irido-sclerotomy of Vicentis and the sclero-dialysis of DeWesker and several other procedures in which the same principles are involved.

On the theory that glaucoma is the result of anterior retention belong the incisions of the irien angles and the various forms of irido-dialysis. Subconjunctival sclero-corneal fistula, produced by entanglement of the iris, was sought as a means of producing a filtration scar. To the same end trepanation of the sclera or sclerectomy has been performed on various parts of the globe.

Recently out sclerotomy, either with or without iridectomy and with excision of a bit of sclera at the sight of the incision has been extensively practiced and excellent results reported by Holth and Lagrange and others.

Cyclodialysis seeks to establish communication between the anterior chamber and the supra-choroidal space. Since it is a comparatively new operation (Heine, 1904) final judgment cannot yet be passed on it. Many good results are reported and also many complications.

Extra-bulbar methods.—Among these are ciliary neurotomy (1870) and the optico-ciliary neurotomy (1876) for eyes blind from absolute glaucoma. Also stretching and plucking out of the nasal or infra-trochlear nerve and extirpation of the ciliary ganglion. Ablation of the superior cervical ganglion of the great sympathetic nerve was introduced in 1898.

Electricity in the form of the galvanic and faradic currents have been used with apparent benefit.

Massage either alone or in conjunction with anterior sclerotomy is used. When used alone it is with the expectation of dilating the excretory channels around the rim of the anterior chamber. When practiced in combination with sclerotomy it is for the purpose of retarding, healing and making a more permeable scar.

Subconjunctival injections have been used for their supposed effects in restoring osmotic balance as well as their counter irritant and lymphagogue action.

All known forms of treatment (with the possible exception of the last) do not affect the cause of the morbid process but seek only to relieve its most conspicuous symptom—hypertension. This seems to be best accomplished by means of a filtration cicatrix of moderate size and porosity, situated at the very outermost limits of the sclero-corneal junction, loosely covered by healthy conjunctiva, and without involvement of any part of the uvea. This is most easily obtained by a simple incision followed by pressure massage.

Dr. H. B. Young, of Burlington, Iowa, said that of all the operations named, it is claimed that Hancock's is the simplest. He has recently seen some very favorable reports. Pollok, of St. Louis, used the operation in forty cases with great success. Four weeks ago a gentleman, fifty-nine years old, came to Dr. Young practically blind in one eye, with an acute attack of glaucoma. He wanted the eye enucleated. The speaker persuaded him to allow an attempt to save the eye. He had a very marked mitral insufficiency, which Dr. Young thought precluded general anesthesia. He did a Hancock operation and in thirty-six hours the patient was relieved of all his symptoms. Then the trouble recurred and was worse than before. The speaker, in order to relieve him of almost unbearable pain, enucleated the eye. There was a history of an original injury to the eye, and although he could not get anything by transillumination which would indicate that there was anything except glaucoma, there seemed to be an intraocular growth. The pain was evidently very severe and uncontrollable and the limit of the patient's endurance had been reached. The question in his mind was whether he made the incision into the eye large enough. He thought the direction of the knife was correct, but in withdrawing it he might have clipped the zonule. The aqueous was lost at that time and even the vitreous present. There was considerable hemorrhage, a large growth remaining in the anterior chamber. The eye will be examined microscopically and the findings reported later.

Dr. Gradle said that cyclodialysis possessed many advantages over other procedures and did not seem to be involved with much risk. If done successfully, it leaves the eye practically unmutilated and avoids much of the annoyance connected with iridectomy. His experience in chronic glaucoma has been small. One case of secondary glaucoma in a child, was a complete success. He has since done the operation four times in similar cases, but too recently to make conclusions of any value. Meller, one and one-half years ago, spoke of forty-two cases, but few of which were simple glaucoma. Uthoff employs the operation extensively, with good results. Elsching reported seven cases of infantile glaucoma, of which four were cured: 11 cases of simple glaucoma, with 11 cured by one cyclodialysis and 2 by a second operation. The others were not cured and were submitted to iridectomy, at least in part. In 20 cases of inflammatory glaucoma, 13 were cured, two after previous unsuccessful iridectomies. All cases dated back at least five months. According to a report by Dr. Gradlegunn, at present assistant at Elsching's clinic, he submits every case of simple glaucoma to cyclodialysis in the first place, but the operation must occasionally be repeated and is sometimes followed by iridectomy. However, a large proportion of cases of simple glaucoma are permanently benefited by a single cyclodialysis.

Dr. Suker said that cyclodialysis is a very neat operation and is indicated, with beneficial results accruing, in simple glaucoma. He has tried it in a number of operations, with good result, but in one case very disastrous complications were noted. The patient was a middle-aged man, who had a partial iridonesis as the result of traumatism. He developed an iridocyclitis, which gave him an annular synechia. He proposed enucleation, but did not want to sacrifice the eye, and as he could not do broad enough iridectomy he did a cyclodialysis, reduced the tension—which had been increased, and the pain for six months, but finally the eye had to be enucleated on account of secondary increase in the tension and hemorrhagic conditions. At the site of entrance of the knife he developed a scleral staphyloma, with prolapsed iris, ciliary bodies and part of the retina. The eye eventually had to be enucleated.

He could not say whether the mishap in this case was due to faulty technic or to complications arising from excessive increase in tension, the hemorrhages or adhesions of the iris to the capsule, in

addition to the cyclitis that had existed and to the endeavor to go through the supra-choroidal space into the anterior chamber, thus doing more damage than was necessary. This is the only case of the kind on record, and is therefore, unique.

Basing his judgment on this case, he would regard this as a palliative measure in cases of this kind. When there are adhesions of the iris, with a crowding forward of the lens, cyclodialysis does not offer as good results as in simple, uncomplicated cases of glaucoma. He has tried it in two or three cases of inflammatory conditions, with good results, but had to do an iridectomy later. In two cases of simple primary glaucoma the tension is still down after a year.

Dr. L. N. Grosvenor stated that an examination of the eye removed by Dr. Suker shows the anterior chamber full of blood, the iris atrophic and adherent to the anterior capsule, the retina completely detached, coming straight from the disc to the back of the lens and over to the ora serrata. The staphyloma contains more or less blood. The inner surface of the retina is crowded out into the staphyloma, and from the lower lip of the wound across the middle of the sac to the outer wall of the sac, and then forward over the base of the ciliary body that had prolapsed, into the wound. The vitreous cavity is full of blood. Macroscopic section shows the sac.

Dr. E. V. L. Brown thought that cases for cyclodialysis should be chosen carefully. His experience in about twenty cases had been very satisfactory, but he thought that the cases to which the operation is best adapted are those of the chronic irritative type, especially, those that are due to anterior synechiae, with secondary glaucoma, rather than to the simple cases of glaucoma. In these cases the iris angle is not applied to the angle back of the cornea. He thought that the cases presented were instructive, but not conclusive as to the merits of the operation. He has sections made from a case seen in Moeller's clinic, where the eye had to come out later. The eye had to be enucleated, but it was a case in which iridectomy would have been of no avail. When the chamber is very shallow, iridectomy should be thought of after cyclodialysis. He said that Dr. Beard is mistaken as to the consensus of opinion as to the difficulty of the operation. It is really a simpler operation than iridectomy.

Dr. Beard, in closing, could see how cyclodialysis would be a more simpler operation than iridectomy in certain instances. Where the anterior chamber is obliterated, one cannot do an iridectomy, but cyclodialysis is possible. Where an iridectomy is possible, he would rather perform it than a cyclodialysis. To enter the anterior chamber neatly, without disturbing the uveal portion of the eye, is a difficult undertaking, especially where there is a spur of sclera that sticks in there at a point where the cornea and sclera join. The spatula is apt to run against that and enter the ciliary body, causing much traumatism of that body.

WILLIS O. NANCE, Secretary.

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### WILLS HOSPITAL OPHTHALMIC SOCIETY.

Meeting of Monday, November 1, 1909.

SAMUEL D. RISLEY, M. D., Chairman.

Dr. William Zentmayer read a paper entitled, "Cyclodialysis, with a Report of Cases." The operation of Cyclodialysis has been performed sufficiently often both here and abroad, and ample time has elapsed in some of the cases for judgment to be formed as to its value. Most of the surgeons who have practiced it have been favorably impressed by the results which they have obtained. The main indication for the operation in glaucoma, is when, because of the absence of the anterior chamber, or because of the advanced stage of the disease it is impossible to perform an iridectomy. It is of particular value in secondary glaucoma, and one case of acute inflammatory glaucoma a brilliant result has been reported. The code of action is not clear but it probably does good by freeing the angle of the anterior chamber.

Dr. Zentmayer has performed the operation on four eyes and he stated that he had only the immediate results to report. In all of his cases iridectomy was contraindicated; and in one case enucleation should have been the proper operation but was refused. The net results in the four operations were as follows: In one case the vision of one eye was raised from L. P. to 2/60, and the Field increased from light, at fixation, to a 10 degree form-field; while T. was reduced to normal. In another, eye vision was raised from fingers at 1 foot to  $\pm$  5/75, and field from fixation to 15 degrees and T. reduced to normal. In the third case vision of one eye has



raised from fingers at 2 feet to 5-35, and the field from 8 degrees, roughly, to 40 degrees, and T. reduced to normal. In the last case the conditions remained unchanged except there was the relief from pain.

Dr. Posey said that he had operated upon three cases in the spring, but as yet, he was not prepared to report his results, although in each the tension of the globe was lowered. He would never operate except in chronic glaucoma and then only after the inflammatory symptoms had subsided. Even in chronic glaucoma he would hesitate if there was any appreciable amount of vision remaining. While not condemning the operation he prefers to rely upon the use of myotics. He suggested that as the large angular keratome in use presented certain difficulties and might be dangerous from a too large or too deep an incision, a knife on the order of a scalpel might be designed.

Dr. Ziegler believed that the lens might be injured and that destructive hemorrhage was likely to ensue.

Dr. Risley feared that the retina might be so much separated that permanent sagging would follow if the membrane failed to reunite. He regarded Dr. Zentmayer's results as most encouraging, however.

Dr. Charles A. Oliver congratulated Dr. Zentmayer upon the great success of his cases. While personally never having had occasions to perform the operation, he has not infrequently seen it done abroad, and has been interested in the various methods attempted for its accomplishment.

Dr. P. N. K. Schwenk presented a middle-aged woman patient to the society, who is the subject of his report of "A Case of Recurrent Sarcoma of the Limbus of the Cornea, with the Preservation of the Globe After Twenty-one Years' Observation." Dr. Schwenk said he had removed growths from the limbus eleven different times in twenty-one years. The growths were diagnosed as sarcoma by three pathologists. He had made twenty or more cauterizations, also, with carbolic acid and nitric acid. The corrected vision still remains the same as at twenty-one years ago. Dr. Schwenk stated that the tendency for these growths has been to grow outwards toward the surface. In a number of places from which the growth was removed the limbus is now free from the disease. Here scar tissue marks the site, and at which no inflam-

matory process has followed. One spot yet shows the existence of the new growth. The foci have grown more rapidly in these last years than in the earlier. Enucleation has been advised, which the patient rejects. Dr. Schwenk still has hopes of eradicating the neoplasm, because of the fact that places which were once affected are now free from it.

Dr. Oliver has seen three such cases, one of which he has described in detail elsewhere. In all, the sarcomatous involvement extended primarily from the corneal limbus along the vascular channels of the sclera, and in one instance, penetrated into the corneal lymph spaces. In his second case, much of the malignant material was replaced by connective tissue after the first attempt at eradication; this case recurred and went on to early extirpation of the eyeball.

He considers, even in cases in which there is uncertainty as to definite pathologic diagnosis—as there often is—that the safest and the surest procedure is radical removal of the affected organ if there is the slightest tendency to recurrence of the primary mass after careful and judicious extirpation.

Dr. Posey said that he would look upon the case as one of not great malignancy and he would feel inclined to attempt to remove the growth itself rather than to remove the globe and the orbital tissues. He had had a case of round-celled non pigmented sarcoma which had invaded the bulbar conjunctiva and it had recurred. This case finally progressed so that enucleation was imperative, yet, it is now several years, and no new focus has since developed.

Dr. Risley said that he had always been suspicious of such new growths and he had heretofore believed it best to remove the globe, if not to exenterate the orbit. Yet he would always temporize. In this connection he would call attention to an apt illustration of certain phases in the life-history of seemingly benign tumors, namely, the tendency to become rapidly malignant once they are subjected to surgical interference.

Dr. Goldberg presented three specimens of the tumor masses removed by Dr. Schwenk which he had prepared. They showed three distinct phases in the histology of the growth, and Dr. Goldberg called particular attention to the progressive increase in the adult connective tissue which he believed to be an attempt at regeneration. In the last specimen this change was quite marked;

the connective tissue here assumed an alveolar arrangement of its elements, while the growth cells visibly decreased in number. This showed, he believed, that the development of connective tissue would ultimately lead to the extinction of the growth.

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Meeting of Tuesday, December 7, 1909.

WILLIAM CAMPBELL POSEY, Chairman.

Dr. Posey exhibited two children upon whom he had recently operated for congenital cataract. One was an ordinary case of zonular cataract, but the other had several points of interest. The second child was one of 8 children, 4 of whom had died in early infancy; of the 3 remaining brothers and sisters, 3 had been operated upon for congenital cataract. Dr. Posey had removed the cataract from the patient's right eye two years previously and that from the left, two weeks ago. Each lens had presented a somewhat milky appearance, and, when the capsule was incised, the contents of the lens spurted up through the opening, playing into the anterior chamber like a small fountain. He had not found it necessary to evacuate the contents of the anterior chamber in either instance; the fluid lens-matter rapidly absorbed without causing irritation.

Dr. Samuel D. Risley presented a little girl upon whom he had operated successfully for the relief of a soft cataract which had been produced by the penetration of the globe by the spur of a bantam cock. While not coming under the category of congenital or pyramidal cataract, the lens, when operated upon by discission, escaped from the capsule as a semifluid mass, in the same manner as in Dr. Posey's case, and became diffused in the anterior chamber, giving to the aqueous humor a homogeneous, muddy appearance. Five hours later the child had severe pain, increased tension, nausea and vomiting, which was promptly and permanently relieved by paracentesis; a week later capsulotomy was done. When exhibited, the child had normal vision, with the proper correcting glass, and a round, central, black pupil. In discussing the sudden onset of tension and pain, Dr. Risley ascribed it to the rapid and complete blocking of the angle of the anterior chamber by the colloidal mass of the semifluid lens and possibly also to some irritating quality

possessed by the Morgagnian lens. He related also in brief, the history of a **young man with lamellar cataract** in both eyes believed to be congenital, but from whom no history of hereditary predisposition could be gleaned. The case recovered with approximately normal vision in each eye. In Dr. Risley's experience such a result was unusual, since ordinarily he had found in all cases of hereditary or familial cataract lesions in the unveal tract sufficient to cause an impairment of the visual acuity. This had led him to inquire whether the uveal disease, consequent to some inherited dyscrasia, affecting the mesodermic tissues, was not the cause of the opacity in the lens, rather than an hereditary tendency to cataract, *per se*. In discussing the technic of operation in this class of cases he said that he performed a vertical incision in the capsule, extending from the lower margin of the dilated pupil, to the upper. If the lens swelled rapidly and caused increase of tension, he inserted a broad and long beaked keratome, carrying the point deeply into the substance of the lens. The instrument was then partially withdrawn, the posterior lip of the wound pressed backward and the soft lens matter allowed to escape, flowing over the anterior surface of the keratome, the triangular blade of which prevented prolapse of the iris. This operative procedure, Dr. Risley thought, shortened the period of treatment as compared with the more cautious dissections he had practiced in earlier days; these often had to be repeated and required long and tedious periods of waiting for the absorption of the lens cortex.

Dr. Zentmayer recalled a previously reported instance of a peculiar form of hereditary cataract occurring in a man and his sister. A second cousin of the patients' mother had had cataract at 15 years of age. All four eyes presented the following characteristics: The corneas were very large; the anterior chambers very deep; the irises were tremulous, large and their small circles sharply differentiated, the larger being blue, the smaller brown, and both without pattern; the scleras were bluish and porcelain-like; the lenses were milky. Three of the lenses were operated upon by dissection; in two instances by but one operation, as the lens matter was so fluid that it flowed at once into the anterior chamber. The operations were followed by so high tension that paracentesis was required. Similiar cataracts have been described by Purtscher and by Collins. Dr. Zentmayer in remarking on the technique of dis-

cission said that he always entered the knife into the anterior chamber through the sclera at a point 2 mm. from the limbus.

Dr. Lewis Ziegler cited two cases of posterior polar cataract occurring in a family in which there was a long history of cataract. These he treated by discission. He said he believed that the disorganized lens matter after the discission of cataract contained acid and irritating substances, and it had always been a question in his mind whether the inflammatory disturbance following operations was due solely to the pressure excited by the swollen particles or to chemical irritation. In operations on juvenile cataracts he makes a V-shaped incision which affords a clean flap, and he refrains from stirring the lens. When there is much swelling he removes the matter by a rocking or pumping motion with a keratome, carrying the point to the edge of the pupil.

Dr. Oliver stated that while he had not heard the presentation of the preceding cases, he was greatly interested in the discission, particularly in regard to the disturbing and not infrequent disastrous activity of the fluids of the anterior segment of the eye in such cases, when freed or excited by operative procedure. He said that the previous generation of surgeons at the hospital, had repeatedly warned their students against the retention of both the fluid contents of the lenticular capsule and the aqueous humor, particularly in the congenital forms of cataract in which there were low grades of uveitis, and in the traumatic varieties in which were low-grade cholesterol and hematin remains, both within the lens capsule and in the anterior and posterior chambers. These empiricisms, he felt, could be better understood in view of the more recent classic researches of Treacher Collins upon the lymph gland of the ciliary bodies, the identity of the fluids, the now better comprehension of normal and abnormal lymphatic circulation of the eyeball, and the condition of the solid constants of the fluids themselves. In regard to the manipulative measures made use of to remove soft cortical material along the flat blade of a keratome, he had oftentimes made use of them and considered them useful when carefully and judiciously done.

Dr. Posey also exhibited a case of recurrent hemorrhages in the vitreous occurring in a young man of 20 years of age. There was a history of long standing constipation and intestinal indigestion. He had never suffered from epistaxis. Examination of the

blood on admission showed red blood corpuscles 3,620,000, Haemoglobin 70%. In each eye the vitreous humor was hazy; the retinal vessels (especially the veins), were dilated and somewhat tortuous, and hemorrhages could be clearly discerned. The patient was placed on a course of potassium iodide; the constipation was controlled by salts, and pilocarpine sweats administered every other day. Under this plan of treatment vision rose, in two months from 5/30 to 5/5 in the right eye, and from 5/9 to 5/5 in the left. Dr. Posey pointed out that the prognosis in many of these cases was not always favorable, as frequently vision had been interfered with by the production of bands of connective tissue which traversed the vitreous. On this very day he saw a young man, formerly the subject of recurring hemorrhages, in whom the bands were so broad and dense that vision was reduced to 1/4 of normal.

Dr. Posey presented two cases of oculo-motor palsy, for the purpose of calling attention to the position which the globe assumes under such conditions. In the first case, one of cerebral syphilis, the palsy of the left third nerve was complete, the intraocular muscles also being affected. In the second, the external branch of the left oculo-motor alone was involved, following a pontine hemorrhage which had also occasioned a right hemiplegia. In each case the IV and VI nerves had escaped. The eye with palsied muscles was directed outwards in each instance, but on the horizontal plane. In the first case, when efforts were made toward downward vision, the paralyzed eye could not be moved at all below the horizontal plane, although the wheel motions imparted to it by the superior oblique were easily demonstrated. In the second case, the wheel motion was not so pronounced (the palsy was of 6 months' standing), but the eye could be moved several mm. below the horizontal plane. Dr. Posey adopted Duane's explanation for the failure of the eye to be moved other than outwards by the externus, for, he said, although the superior oblique is still acting, it cannot move the eye downward since it is not efficient as a depressor when the eye is in a position of abduction, as it is in paralysis of this sort. The most that the superior oblique can do under these conditions is to give the eye a slight inward rotation upon its antero-posterior axis when the patient attempts to turn the eye down.

Dr. Charles A. Oliver read a brief memorial upon George C. Harlan, M. D., a member of the Board of Attending Surgeons to

the hospital, who died on the 25th of September, 1909. Dr. Oliver dwelt upon Dr. Harlan's great ability as an operator upon the eye, considering him one of the most careful, the most conscientious, and one of the most successful of special surgeons. As a man, he said Dr. Harlan was always gentlemanly, ever noble, and unassuming. He knew true friendship in all of its meanings. His greatest preferences were, conversation with a few companions of the highest grades of culture and refinement; the perusal of a book of biography, ethics or of travel; or a ride along the country byways amid nature and all her beauties. His death, an accidental one, occasioned by a fall from the back of his favorite horse, a few days before, "stopped his chosen work, took him from us, and ruined his hoped-for happiness of an undisturbed and unimpaired old age in a quiet home near those who cared for him and loved him."

Dr. Posey presented a miner with nystagmus. Failing vision had been complained of for six months. Examination showed, however,  $6/6$  corrected vision in each eye, with practically normal fields. Syphilis was denied, as well as the possibility of his ocular affection being due to any form of intoxication. There had been no traumatism or illness. On examination it was found that the patient's head was tilted somewhat back and to the right, as though in the effort to overcome double vision. There was slight ptosis in both eyes, with compensatory contraction of the frontalis. In ordinary fixation the eyes were quiet, but as soon as they were moved above the horizontal plane, short vertical rythmical nystagmic movements appeared in each, which became more marked the higher the fixing object was carried. These movements were also seen in all parts of the field of fixation, but especially at the end of the excursions of the several muscles. The optic nerves were hyperaemic but the fundi were otherwise normal. Dr. Posey said that he had been unable to ascertain that the patient had worked in the cramped and unnatural position with insufficient illumination, which has been shown to be the cause of the nystagmus in miners' eyes in England and Europe. The patient was sure that his eyes had been steady until six months ago, and said that none of the other miners who worked under similar conditions had ocular trouble. Dr. Posey considered the case to be one of instability of the centers controlling the movements of the eyes, especially of supraduction, and he was inclined to view it as one of

miners' nystagmus. A searching examination would be made for actual palsies of any of the muscles, and the patient would be submitted to a neurological examination.

Dr. Ziegler showed a negro woman under his care from whose left orbit a sarcoma had been removed. The diagnosis at first was uncertain, but after a short course of medication, strong evidence that it was a true tumor, decided upon surgical procedures. The tumor extended to each side, back to the sphenoid and had entered the ethmoid through an erosion about a centimeter in diameter. The lids now close over the orbit, and the healing is progressing. What the ultimate course shall be is uncertain. Dr. Ziegler presented two cases showing the good effects of the use of tuberculin: one had a large ulcerous mass and the other had tubercle of the ciliary body.

BURTON CHANCE, Secretary.

Dr. Goldberg in his report from the Pathological Laboratory, exhibited several slides which he had prepared from cases which had occurred in his service in the past month. Two were examples of small round-cell sarcomata of the orbit, the case reported today by Dr. Ziegler, and one a small-round-cell sarcoma of the iris. This last was taken from a well-circumscribed tumor which had been removed by an iridectomy. The remaining slide was from a retention cyst of the conjunctiva, probably because of its papillomatous nature, the over-growth of a newly-formed gland.

Dr. Posey in speaking of ocular palsies said that one-half are due to syphilis, and 1/5 to tabes. In a recent analysis of 60 cases of tabes made by him, the oculo-motor was found to be at fault in 30 of the cases: the abducens in 6, and the trochlearis in 2. In the remaining 22 cases the paralysis was a mixed type. Complete unilateral oculo-motor palsy occurred in 3 instances. According to Uthoff, complete palsy of the oculo-motor in all its branches is very rare in tabes, i. e., in but 5% of all cases, and in but a very small proportion of these is the palsy binocular.



## Notes and News

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Dr. J. H. Baas, a well-known ophthalmologist of Worms, died recently.

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The new Toronto General Hospital is to have 36 beds for its eye, ear, nose and throat department.

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A performance for the benefit of the Eye, Ear and Throat Charity Hospital was given in a theater in Baltimore February 7.

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Dr. Samuel G. Higgins of Milwaukee, Wis., has been appointed an assistant medical inspector of schools in that city.

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Dr. William E. Hopkins has been elected to the staff of the Children's Hospital in San Francisco, Cal.

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Drs. John W. Millette and Horace Bonner of Dayton, Ohio, were recent visitors at the Chicago clinics.

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Dr. Clarence A. Neasey, now of Spokane, Wash., was recently elected corresponding secretary of the Spokane County Medical Society.

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Dr. Christian R. Holmes of Cincinnati, Ohio, attended the meeting of the Canadian Hospital Association held in Montreal, March 28 and 29.

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Dr. Charles H. May of New York was one of the speakers at the Jacobi jubilee, celebrating the 50th anniversary of Dr. Abraham Jacobi's service in Mt. Sinai Hospital, New York.

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Drs. Derrick T. Vail, Arnold Knapp and Wendell Reber have been elected foundation members of the Oxford (England) Ophthalmological Congress, which was formally organized in July, 1909.

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The Massachusetts Charitable Eye and Ear Infirmary received \$5,000 from the estate of the late George William Boyd of Boston.

Dr. Jesse Southgate has been appointed clinical assistant in ophthalmology in the medical department of the University of Cincinnati.

Dr. George Mueller has been appointed to the medical staff of the new dispensary of the German Hospital, Brooklyn, as oculist.

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Dr. Jos. A. White of Richmond, Va., was elected president of the Tri-State Medical Association of the Carolinas and Virginia, held in Richmond, February 15-17.

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Dr. E. J. Widmark, professor of ophthalmology at the University of Stockholm and a man of international reputation as an ophthalmologist, who has written extensively, died recently.

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Dr. John H. James of Mankato, Minn., was elected delegate to the State Society at the annual meeting of the Blue Earth County Medical Society.

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Dr. Slocumb R. Edwards of Silver City, N. C., recently received the appointment of medical superintendent to the Presbyterian Eye, Ear, Nose and Throat Hospital of Baltimore.

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Prof. Dr. E. Zaufal died recently in Vienna, Austria, aged 77 years. He was the first to direct attention to the necessity for examining the fundus oculi in ear diseases.

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The meeting place at St. Louis for the Section of Ophthalmology of the A. M. A., next June, will be Aschenbroedel Hall, 3535 Pine street. The hotel headquarters will be at the Marquette Hotel.

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Dr. D. W. Greene, Dayton, Ohio, was given a reception and banquet at the Dayton Club by the Montgomery County Medical Society to celebrate his return from his trip around the world.

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Dr. Harold Gifford of Omaha will remain associate dean of the College of Medicine of the University of Nebraska, a position which he contemplated resigning, but has been persuaded to retain.

Massachusetts has under consideration a bill making it obligatory for every physician, medical student or midwife attending at the birth of a child to instill a prophylactic for ophthalmia neonatorum into its eyes immediately after its birth.

An ordinance recently passed by the Spokane City Council prohibits the firing or discharge, at any time during the year, of toy cannons, cannon crackers, giant fire-crackers, bombs and blank cartridges.

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At the annual meeting of the Central Texas District Medical Society, Dr. James M. Woodson of Temple, Texas, was elected chairman of the section on diseases of the eye, ear, nose and throat, and Dr. Walter R. Washburn of Cleburne was elected secretary.

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Mr. William Ibert Hancock, F. R. C. S., Eng., assistant surgeon to the Royal London Ophthalmic Hospital (Moorfields) and at one time dean of the staff of the Central London Ophthalmic Hospital, died of embolism following an operation for appendicitis, at the age of 36.

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Dr. Derrick T. Vail of Cincinnati lectured before the Ophthalmological Club at Buffalo March 19, the Ophthalmological Section of the New York Academy of Medicine March 21, and by invitation after a dinner given in his honor at Philadelphia March 30, on the Smith method of removing cataracts in the capsule. His lecture was illustrated by numerous lantern slides, showing the various stages and steps of the operation in detail.

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An optometry bill is now before the Maryland legislature. It is opposed by Drs. Samuel Theobald, Herbert Harlan, H. O. Reik, Hiram Woods, J. J. Carroll, J. F. Crouch, Ernest A. Knorr, G. Milton Linthicum, Arthur P. Herring and Lewellys F. Barker. The latter calls particular attention to the eye symptoms of serious diseases such as brain tumor, tabes, etc., where the earliest symptoms are frequently found in the eye and where those untrained in medicine would work great harm to the public by failing to recognize and properly treat these dangerous conditions during the early and favorable stages.

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A curious case of color blindness has recently occupied the attention of government officials. A man began a seafaring life as an ordinary seaman and worked himself up so that six years ago he passed the examination for a second mate's certificate. No question

of color blindness arose until eighteen months later, when he was examined for a first mate's certificate. He was rejected in the color test and asked to surrender his certificate as second mate. He appealed and was submitted for examination to Sir William Abney, F. R. S., an eminent physicist and the foremost authority on color vision in Great Britain. Sir William Abney found that the man was red blind; both colored lights and wools were used in the tests. He was then put to practical tests by two independent men, of whom neither was a color expert. The man was taken down the Thames in a steamer at night when the weather was fine but hazy to see how he could pick up lights and name their color. So accurate did his vision prove for red that he was able to distinguish red rays in the Nore light. The reddish color in the planet Mars was at once seen by him though he was unaware of the planet's identity. Both examiners declared that he had unusually good sight and never made a mistake in determining the color of any light. The man has therefore been declared by the board not to be color blind and as competent to discharge his duties as mate. This result points to the conclusion that the color tests of the board of trade, which have been adopted under the advice of the Royal Society, the leading scientific body in Great Britain, are fallacious.—*Jour. A. M. A.*

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Dr. Frank C. Todd of Minneapolis, with three general surgeons, has recently opened in that city the Hill Crest Surgical and Eye, Ear, Nose and Throat Hospital (private), for the care and treatment of eye, ear, nose and throat and general surgical cases exclusively. The hospital has been especially built by its staff for the purpose intended, many novel and convenient features being incorporated. It is equipped with an electric light signal system, and piped with vacuum cleaner. Sun rooms and sun porches are provided, and a special eye operating room has been constructed for the exclusive purpose of operating upon clean eye cases. Special beds have been constructed, which can be raised and lowered, provided with low foot-boards and large rubber tired wheels, so that eye cases may be operated upon in bed, the bed being wheeled from the operating room to the private room, the doors of the private room being wide to allow for the passage of the bed. This is the only eye, ear, nose and throat hospital in the Northwest, and the many features provided for the comfort of the patients and the convenience of the surgeons make it unique.

The army of Austria-Hungary often number among its members individuals who come from regions infected with trachoma, who, without showing manifest symptoms, are the source of troublesome outbreaks of this disease. Certain parts in the eastern and southern districts are hotbeds of the infection. Much has been done to suppress it, but the rather low degree of culture and the low standard of life of the inhabitants make it a troublesome task. The conditions of combating trachoma in the army have been recently regulated by an ordinance of the general staff surgeon. Thus each regiment has to contain at least one surgeon, who has had a special training in an eye clinic, of not less than one year's duration. For this purpose a number of scholarships for trachoma wards have been created by the ministry of war. A special (non-military) eye surgeon will be appointed in co-operation with the civil-service authorities for every ten villages in the infected regions, so that he will be able to visit every ten days each of his villages. In these trachoma places special hospitals will be erected, solely for the purpose of treatment of soldiers affected with these diseases. No man suffering from trachoma, when called on to enlist in the army, should be accepted until he be cured. Trachoma of a grave nature makes a person unfit forever for military service, according to Austrian law. A special military oculist shall inspect all trachoma hospitals and patients within certain intervals and report on his observations directly to the general staff surgeon. It must be considered that while fifty years ago nearly 6 per cent of all recruits were suffering from trachoma, now the percentage has gone down to 0.9 per cent, and in many regiments it is extinguished entirely. In the regiments recruiting from the trachoma regions alone (about sixteen regiments) the percentage is at present above 10 still. Mainly for this reason the above mentioned rules were drawn up.—*Jour. A. M. A.*

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#### OXFORD OPHTHALMOLOGICAL CONGRESS.

Members of the medical profession who desire to become original members of the congress are requested to communicate with Mr. Sydney Stephenson, 33 Welbeck street, London, W., before June 25th, 1910. Extra fee, 10s. 6d. No annual subscription.

# CHICAGO EYE CLINICS.

## NOTES AND NEWS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.G.) J. F. Burkholder (E. E. N. T.)	G. W. Mahoney (Pol.) *Geo. F. Suker (P.G.) Oliver Tydings (E. E. N. T.) C. H. Francis (Pol.)	E. J. Brown (E. E. N. T.)	G. W. Mahoney (Pol.) Rich'd S. Pattillo (P.G.) J. F. Burkholder (E. E. N. T.)	Richard S. Pattillo (P.G.) Oliver Tydings (E. E. N. T.)	G. W. Mahoney (Pol.) E. J. Brown (E. E. N. T.) C. H. Francis (Pol.)
10 A.M.	L. J. Hughes (E. E. N. T.) Brown Pussey, N.W.U. Every day, 10-12 A.M.	J. R. Hoffmann (E. E. N. T.)	E. J. Brown (E. E. N. T.)	L. J. Hughes (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)
11 A.M.	H. W. Woodruff (E. E. N. T.)	A. G. Wippert (E. E. N. T.)	J. R. Hoffman (E. E. N. T.)	A. G. Wippert (E. E. N. T.)	H. W. Woodruff (E. E. N. T.)	A. G. Wippert (E. E. N. T.)
1 P.M.	Willis O. Nance (C.C.S.)	Willis O. Nance (C.C.S.)	Willis O. Nance (C.C.S.)	Willis O. Nance (C.C.S.)	Willis O. Nance (C.C.S.)	Willis O. Nance (C.C.S.)
2 P.M.	E. V. L. Brown (Inf.) E. J. Gardner (E. E. N. T.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) D. A. Payne (Ills. Med.) N. E. Remmen (Inf.) N. A. Phillips (Inf.) Emily Selby (Inf.) Wm. H. Wilder (Rush) *H. W. Woodruff (Inf.) N. A. Young (Inf.) Francis Lane (Rush) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) *Oscar Dodd (Inf.) M. H. Worthington (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) Thos. Faith (E. E. N. T.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) *Wm. H. Wilder (Rush) *Wm. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)	E. V. L. Brown (Inf.) W. A. Fisher (E. E. N. T.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) N. A. Phillips (Inf.) Emily Selby (Inf.) Wm. H. Wilder (Rush) N. A. Young (Inf.) E. J. Gardner (E. E. N. T.) Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruff (St. Luke's) J. B. Loring (Inf.) D. A. Payne (Ills. Med.) F. A. Phillips (Inf.) *Wm. H. Wilder (Inf.) H. B. Williams (Inf.) Francis Lane (Rush) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) *Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) Thos. Faith (E. E. N. T.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) E. J. Gardner (E. E. N. T.) Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruff (St. Luke's) J. B. Loring (Inf.) D. A. Payne (Ills. Med.) F. A. Phillips (Inf.) *Wm. H. Wilder (Inf.) H. B. Williams (Inf.) Francis Lane (Rush) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)	E. V. L. Brown (Inf.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) Wm. H. Wilder (Rush) H. W. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) *Oscar Dodd (Inf.) Thos. Faith (E. E. N. T.) M. H. Worthington (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) W. A. Fisher (E. E. N. T.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) D. A. Payne (Ills. Med.) *Wm. H. Wilder (Inf.) *Wm. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)
3 P.M.	W. Allen Barr (C.C.S.) *Wm. E. Gamble (P. & S.)	H. H. Brown (Ills. Med.)	*T. E. Harper (P. & S.) W. Allen Barr (C.C.S.) *Wm. E. Gamble (P. & S.)		W. Allen Barr (C.C.S.)	Geo. F. Suker (P.G.)
4 P.M.	W. F. Coleman (P.G.)	C. W. Hawley (P.G.)	G. F. Suker (P.G.)	C. W. Hawley (P.G.)	W. F. Coleman (P.G.) Brown Pussey (County)	

\*Special operative eye clinics.

### ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 819 W. Harrison Street. E. E. N. T.: Chicago Eye, Ear, Nose and Throat College, Washington Franklin Streets. Clinics all day.	County: Cook County Hospital, W. Harrison and Ills. Med.: Illinois Medical College, 182 Washington Blvd. Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.	Pol.: Chicago Policlinic and Hospi- tal, 174 E. Chicago Avenue. P.G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street. N. W. U.: Northwestern University, 2431 Dearborn Street.	Rush: Rush Medical College, W. Harrison and Wood Streets. St. Luke's: St. Luke's Hospital, 1410 Indiana Avenue.
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# THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS  
OF OPHTHALMOLOGY

VOL. XX

CHICAGO, MAY, 1910

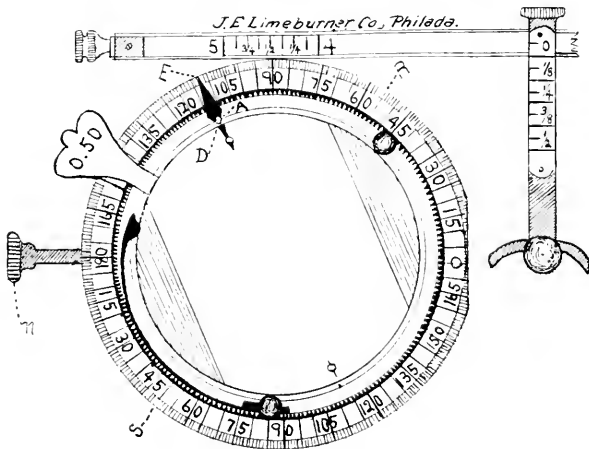
NO. 5, NEW SERIES

## A ONE DEGREE ASTIGMATISM SCALE.

BY J. N. RHOADS, M. D.,  
PHILADELPHIA.

(Illustrated.)

A ONE DEGREE DIVIDED SCALE. EXTENDED INTO A COMPLETE CIRCLE;  
A TRAVELING INDEX; NOTCHED CYLINDER RINGS; LOCKED  
WITH AN AXIS-PIN: FOR GETTING THE "KNIFE-EDGE"  
AXIS OF ASTIGMATISM.



It will be noticed in the accompanying cut that instead of the scale being marked in five degree spaces, like all the old ones have been, that this one is marked with lines one degree apart. The five degree lines are and should be broader, and therefore plainer than the one degree lines. Instead of being short as in the old scale the five degree lines are extended from edge to edge,

making them more than twice the length of the old system lines, and being radial they are of course wider at the outer edge. The scale might be made still wider except on the nasal side, where it might be flattened to allow the two scales to slide close together. The greater the circumference the wider the one degree spaces, and, consequently, the more easily read either with or without a pointer. The one degree lines will be noticed running centerward from the extreme edge of the circle and are about a millimeter in length.

#### ONE DEGREE SCALE.

It will also be noticed that this new scale has been extended into a complete circle. The old scale stopped at fifty-five degrees, as seen at R near the top of the circle, and at fifty degrees, as seen at S at the bottom. The complete circle will be found a great innovation in axis getting. Instead of running off at the end of the scale when you want to get an axis approximating 60 degrees you can use the other side of the frame and have a full swing without the inconvenience of paralactic guessing through the lens holder springs, and thereby failing to get within five or more degrees of the right place. Even the cheaper frames with non-rotary lens cells should have their scales extended ten or more degrees at either end.

#### TRAVELING INDEX.

With this one degree divided scale goes a traveling index, as seen in the cut at E. This index is fast to the revolving cell which holds the cylinders in the frame. It is three-eighths of an inch long, and points and travels over the one degree scale with its distal point, while the inside point lies exactly under the diamond scratch which marks the cylinder axis. Both points should be black. I at first made a vernier scale to travel with the index, but I found it unnecessary and discarded it. Of course it is understood that this index and cell can make a complete revolution, and is revolved by the little milled thumb-wheel seen at the left and designated by N. The distal end of the index besides being black and sharp should be bent down close to the scale in order to eliminate all parallax. So that it will be easier to read off one degree findings with this index and scale than it would be to guess at five degree readings by the old method.

#### NOTCHED CYLINDER RINGS LOCKED WITH AN AXIS-PIN.

After using the index for about six months I found that there



was a little uncertainty about placing the cylinder in juxtaposition with the index. And, too, in turning the cylinder it would sometimes slip out of position. I then filed a narrow "V" shaped notch in my cylinder rings adjacent to their axes as seen in the cut at D. This notch would be an advantage to all cylinder rings, whether used with the index or not. I am under the impression that the old-fashioned spun-up cylinder rings, which have flanges but no handles, are so marked, and it doubtless was a retrograde step to cease marking them. The flanges marked on their extreme peripheries makes axis guessing more exact.

In connection with the notching of the cylinders, I had a small knife-edged pin placed in the center of the index, shown in A, in the cut. This pin securely locks the pin in position and eliminates an ever-recurring opportunity to make errors. This axis-pin allows the cylinder to be placed carelessly in the frame and to be rotated into position without any care to the operator.

This pin makes axis getting as nearly perfect as it is necessary until the opticians divide their working scale to one degree or less. When they put their drilling stages under the command of a micrometer screw they will be able to drill to the thousandth of an inch and the doctor may order his prescription as his judgment directs.

#### SWINGING SYSTEM.

In my estimation there has never been devised a way for getting the axes of astigmatism that is anywhere near equal to swinging the cylinder. Without the one degree divided scale and the traveling index it has, however, a drawback which makes it next to impossible to get within  $2\frac{1}{2}$  degrees of the correct axis in fifty per cent of the cases, because half of the time odd and even numbers must be added together to get the mean, or, what is worse, five degrees must be discarded before the mean is worked out.

My *modus operandi* with the swinging system follows:

In getting the axis in the 90 degree region, I add the extremes and take the mean. In the 180 degree region there are two ways of getting the mean. In the first one (which I always use) I add the extremes and divide by two, and if the result is less than 90 I add 90 to it for the mean, and if it is more than 90 I subtract 90 and the result is the mean. When I use the other way I add the extremes and if the sum is more than 180 I subtract 180 and di-

vide the remainder by two. If the sum of the extremes is less than 180, I add 180 and divide the amount by two and the quotient is the correct axis.

I hope it may not be thought peurile to give an example or two showing in detail the way I use the system. I generally allow my shadow test a leeway of about five degrees in axis, and perhaps a quarter diopter, more or less, in strength of cylinder, and thus have my patient face the trial cards with a nearly corrected astigmatism.

Assuming a case to need a one diopter cylinder at proximally 95 degrees, I place the cylinder in the frame and adjust it at that figure. I then say to the patient, "I am going to turn this glass and I want you to *'fix'* your eye on the last letter in the lowest line you can read, and when it begins to blur *'nod'* your head very slightly." When the patient nods I stop the cylinder, and read the degree at which the index is pointing and call it out to the secretary. Having turned to the right, we assume, in this case, that the index points to 67. I return the index to 95, and then turn the cylinder to the left, and ask the patient to indicate to me when the same letter begins to blur, and this time we will assume the signal to be given when the index reaches 125. I call this figure to my secretary and she adds them up and divides them by two, and tells me the mean, which, of course, is 96. I append the simple formula:  $67 + 125 = 192 \div 2 = 96$  degrees. With the regrettable knowledge that a cylinder can not (will not) be ground with an axis one degree from the charmed multiple-of-five line, and the cylinder being low, I would order the glass at 95°.

I do not always have the patient choose the last letter in the lowest line they can read, but if they have a tendency to wander all over the line it is better to have them do so. I really prefer a right angular letter, such as "T" or an "L," if there is one in their lowest line. Nor do I always have them "nod" their heads for a signal, but I believe it to be the most delicately precise way to get scientific results. In using the "nod" signal the patient does not have to think of a special word and waste time waiting for the word message from the brain. Nor does the operator have to take his eyes from the scale to watch the first movements of the lips to stop the cylinder.

Of course it is not always necessary to go through all this

work in detail, especially with high cylinders. In such cases it is only necessary to swing the index five or ten degrees on either side of the axis found by the retinoscope, and the result figured out in the head as the rotating proceeds. If the patient needs a weak cylinder he allows the index to turn much further, and it becomes more necessary to add up the extremes to get the mean. If, for instance, we take a patient who needs a quarter cylinder, and go through the same maneuver as before and turn first to the left, starting from 80, we would be allowed to turn say to 120. Returning to the starting point and then rotating to the right, we would be stopped, say, at 40, and we find the mean to be 80°.

I will now try a case with an axis at five degrees, and a half diopter cylinder. Placing the index at five degrees, I revolve the cylinder against the hands of the clock, having the patient "*fix*" the last letter in the lowest line he can read, and by a "*nod*" the cylinder is stopped at 36. Returning the cylinder to 5, I again ask the patient to watch the same letter and find that I am stopped at 154, which gives these formulæ:  $36 + 152 = 188 \div 2 = 4$  degrees, or  $36 + 152 = 188 - 180 = 8 \div 2 = 4$  degrees. Again I am compelled to order my prescription one degree from where I think it ought to be, and, consequently order the axis placed at five degrees, because I know it will not be ground at four degrees if I so order it.

To show how the system works when the sum of the extremes amounts to less than 180, and, likewise, the half of the extremes to less than 90. Suppose a patient allows the cylinder to swing to 15, and upon reversal permits it to swing to 135, and we have these formulæ:  $15 + 135 = 150 \div 2 = 75 + 90 = 165$  degrees, or  $15 + 135 = 150 + 180 = 330 \div 2 = 165$  degrees.

It is not to be supposed that these cases always come out just as here indicated. The mean varies some at nearly every trial. I always go over the method three or four times during the first sitting and preserve the formulæ. I go through the same procedure at the second sitting, compare the formulæ, and by them write the final axis. The use of this system makes it much less necessary for a "*sine myd*" examination, but there is no better system to use in making it.

It is claimed that the axis of astigmatism can not be told within five degrees. Such a statement is more or less true, with

the old scale marked with lines five degrees apart. But when these lines are only one degree apart the mystery of always ordering the axis on a number divisible by five is dispelled.

I do not believe that the so-called astigmatism with the rule actually falls more often on 90 than it does on ninety, one, two, three or four. Or, likewise, on a hundred and eighty more often than it does one, two, three, or four degrees from it. I consider it a grave blunder to assume that an axis of astigmatism falls anywhere. *Let every eye answer to its own curvatures.*

While there may be a fast and loose rule which oscillates within five degrees of 90 or 180, the extremes of such an assumption might cause a mistake of ten degrees in an oculist's prescriptions. The time is rapidly approaching when prescriptions will not be written at 90 and 180 just because the axes happen to fall within a few degrees of those halloed points.

I guess it is the rule of late day oculists to suspect every pair of glasses which are alike. With the same assumption I always doubt the surgeon's ability who orders glasses with exact *symmetrical* axes, whether they are at 90, 180, or 45 degrees. I would like to destroy all existing rules for jumping at the axes of astigmatism and leave none in their places: and thus every surgeon would face each case of astigmatism without any preconceived idea of where the axis shall be, and know only what his retinoscope has taught him.

I was told by one of the best manufacturing opticians in this city that a glass could not be ground within five degrees of a certain angle without guessing at it. Well, if it can not it is time it **could**. I know that an optical machine could be constructed with a micrometer adjustment that would drill holes wherever wanted.

I must confess that I was amazed when I went among the manufacturing opticians to investigate the subject, to find some of them still marking their cylinders by hand, with an inked stick: actually holding the cylinder in one hand and lining it by a slack string hanging only a foot away: and thus, for drilling, marking the cylinder with a toothpick in three places more or less in line. Surely, it is impossible to mark a cylinder within one degree of a given axis in such a manner.

Some of the opticians have an instrument which adjusts the lens more accurately, and while in position, marks it for drilling.

Unfortunately the scale on this instrument is not marked finer than five degrees.

#### TWO AND A HALF DEGREE SCALE.

If in the present status of optical instruments, which includes those used by the doctor as well as by the optician, it is considered too great an advance to divide astigmatism scales into one degree spaces. *Let them be divided in two and a half degree spaces; just a line in the middle of each present space.*

#### PERSONAL EQUATION.

Unfortunately, neither instrument nor scale can do this work. No machine ever did or ever will. All machines are governed by personal equations, and work with precision or not accordingly. Even in astronomy, the most exact of the sciences, personal equation is ever ready to make trouble. A star is seen to cross the meridian through a transit instrument which may contain 9 cobweb wires, and must be adjusted by hours of careful work. The carefulness of many different men enter into the final result, and yet a transit instrument must be accurate enough to tell the time of a solar eclipse two thousand years to come or as many back.

Without splitting hairs in this matter the same factor enters specifically into getting the axis of astigmatism, and into the proper grinding and setting of the lens.

Suppose we say that the axis of a given case is exactly 80 degrees, and a not over skilled oculist has a personal equation of the numerical value of 5 and orders the glass ground at 75. Now, as the manufacturing optician admits his personal equation has a liberty of five degrees, and giving this case the full benefit, the glass is handed to the fitting optician with its axis actually at 70 degrees. If this lens is a left one, and the fitter drops the bow end of the glass down an eighth of an inch or more (as is often done) the victim is burdened with a glass nearly fifteen degrees from its correct axis. If only the *two and a half degree scale* is adopted, even these extreme errors will be reduced one-half.

Probably the greatest factor in the personal equation problem is *parallax*, whether we are speaking of the doctor, the grinder, or the fitter. The one-degree scale, the traveling index and the notched rings, locked with the axis-pins, minimize the doctor's defects. The micrometer screw, the collimeter with the cross-wires

and a one-degree scale practically eliminates the grinder's troubles. To destroy the parallaxic foe of the fitter is a harder battle to fight. Perhaps it is here that the fitting warrior, with care and skill, and special intuition, may hit the mark without anything tangible to guide him,—as did the Redskin, in the early days, bring down the eagle with his parallaxic arrow—and achieve success or suffer failure, according to his ability to handle this subtle foe.

In conclusion, I want to emphasize two things. First, let every doctor have a one-degree scale, with an index, and use the swinging system for finding axes. Second, let all manufacturing opticians have their machinery so constructed that they can set a cylinder at *any* angles. Then, and not till then, will it be possible to reduce the working error of astigmatism axes from five degrees to one.

1635 SOUTH BROAD STREET.

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## CATARACT ABSORPTION—WITH REPORT OF A CASE.

By A. MORGAN MACWHINNIE, M. D.

SEATTLE, WASH.

(Illustrated.)

Much experimental work is being done at the present time regarding absorption of immature and incipient cataract, and some may have allowed their reportorial zeal to exceed their results.

<sup>1</sup>Verderau reports 21 cases in which he used 2½ per cent potassium iodide under the conjunctiva with a marked improvement in every case treated, while in one case there was a complete disappearance of the lenticular opacity.

Pons y Marquis Palama<sup>2</sup>, in December, 1906, undertook to treat three cases according to the methods used by Verderau, with the result that every lens showed a progress of its opacity, either in the formation of new striae or a greater opacification of the nucleus. His investigations were such that he refused to give it a further trial.

The injection of potassium iodide in an aqueous solution by V. Pflugk<sup>3</sup>, Marquis Menacho<sup>4</sup>, and Verderau was used with the idea of absorption of the lens striae or lenticular opacities. While Verderau and Pflugk seem to have obtained such brilliant results,

Marquis and Menacho, using the same line of treatment do not seem to have met with the same success. On the contrary, many cases progressed more rapidly when using the injections than when not.

These cases are to be contrasted with the two cases reported by Angieras<sup>5</sup> in which a severe conjunctivitis followed by an iritis resulted in the complete absorption of the lens after the subsidence of inflammatory symptoms. His second case was much the same. with inflammatory swelling of the lids, the pain being such as to prevent sleep. This also was followed by a rapid clearing of the lens as in the first.

Etue<sup>6</sup> claims to have obtained marked betterment of vision in incipient cataract, by the local use of a one-half per cent resorcin ointment with a vaseline base. The application over a period of from three to four weeks being sufficient to bring about appreciable results. These observations warrant him, he believes, in stating that a cataract can be arrested in its incipency where the peripheral opacity has not reached the pupillary space; but when this has taken place, the treatment is useless.

He has a few cases where practical results were secured, viz., an improvement of from four to eight numbers of Jaeger's test type being the rule. He believes that if the vision with the test lens is under J. 12 to 14 it is useless to try this treatment. No other experimenter has yet reported upon this method.

Bernstein<sup>7</sup> reports three cases in which dionin was injected under Tenon's capsule in one-half per cent solution in glycerine, a 5 per cent solution being used as a collyrium at home. The visual improvement was very marked in both eyes. The second case of incipient nuclear cataract showed no increase in the vision after the treatment, however, but nine months later there was increase in the vision from 20/1x to 15/xxx in the right eye, and fingers at 2 m. to 15/1 in the left. The third case presented no appreciable difference from treatment. In all his cases general hygiene and dietetic instructions were given, which may have been largely responsible for the improvement.

Le Roy<sup>8</sup> reports seven cases in which the vision was improved in all cases but one by the use of sodium thiocyanate internally and hypodermatically. This method is worthy of a further trial and should be reported more in detail to be of service.

There is an old and trite axiom that "Once a lens shows a beginning opacity, whether in the striae or the nucleus, rest assured it will stay there." Such is the teaching of text-books, and has received the substantiation of DeSchweinitz and Risley at the 1900 A. M. A. meeting. With the strides of advance that are made each year in ophthalmology we have brought more noticeably to ourselves that a large majority of such cataract cases find their etiology in other parts of the body, the number that can be said to be really local in etiology diminishing each year with our increased knowledge.

The idea that a cataract is a part of old age is finding less support each year. We have probably in India a greater number of cataracts than any other country according to population, and the age at which they occur in that country immediately suggests a disturbed equilibrium between assimilation and elimination. You have but to recall the fact that conditions in India are such that thousands are living in absolute poverty, famines frequently occur, environments and sanitary conditions are not what they should be: contrast this with the conditions in America where the people are better fed, have modern sanitary surroundings, and some credence must be placed on vitality and nutritional value as a causative factor in cataract formation.

In direct line with this nutritional value theory Connors<sup>8</sup> reports a case of entire disappearance of striae in both lenses during three years in which the case was under his observation, the refraction changing several times. In another case there was a complete disappearance of the striae in one eye and partial clearing in the other.

In support of his contention that hygienic and dietetic treatment will often cause the restoration of a clear lens I report the following case in which, in an unusually short time, there was a complete disappearance of the lens striae in one eye, and in the other during the same period of time in which the case was under observation 50 per cent of the opacity disappeared. In order that there might not have been any question in regard to the previously existing condition of the lens my colleague, Dr. Würdemann, also examined the case and made drawings showing the conditions with history: The eyes get tired very easily for the past three or four years, especially when he uses them for near. During the daytime



he had no trouble reading the newspapers, but at night it was practically impossible. He gave the history of a specific infection four years previously, being treated intermittently for three years by internal administration of mercury. The left eye presented a fully dilated pupil which accompany this report.

Mr. A. D. *French*, age 40, was referred for treatment by his family physician, Dr. Delague, November 8, 1909, with the following subjective history: The eyes get tired very easily for the past three or four years, especially when he uses them for near work. During the daytime he had no trouble reading the newspapers, but at night it was practically impossible. He gave the history of a specific infection four years previously, being treated intermittently for three years by internal administration of mercury. The left eye

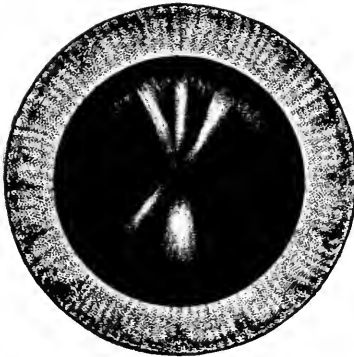


Fig. 1.  
R. E. Nov. 8, 1909.



Fig. 3.  
R. E. Nov. 22, 1909.

presented a small amount of vitreous opacities with a distinct chorio-retinitis. Vision of both eyes with the mydriatic was respectively 6/vi—1 and 6/xv. The condition of both right and left eyes was seen under full dilation with a mydriatic and shown in Figs. 1 and 2 respectively. The retinoscopic and objective examination failed to improve the vision.

I informed the patient that under local treatment as well as systemic treatment, it might be possible to cause a partial absorption of the lens opacities and he was referred to his physician with instructions to use mercury to saturation. Instead of returning to me for local treatment, he was under treatment by his physician with injections of benzoate of mercury, one cgm. daily for 20 days,

which was the time that had elapsed since making the first examination. On his return November 28, 1909, the sectoral opacities of the left had entirely disappeared, with vision 6/vi—3, and Jaeger 1 at 15", no correction being given.

Examination of the left lens under high magnification failed to show the slightest trace of the previously existing condition. The condition in the right eye, in which there had been five distinct sectoral opacities is shown in Fig. 3, and clearing of the lower part, as shown under date of November 22. For the following ten days the treatment consisted of high frequency on alternate days, with the result as shown in Fig. 4.

His business compelled him to leave the city and he was in-



Fig. 4.  
R. E. Dec. 2, 1909.

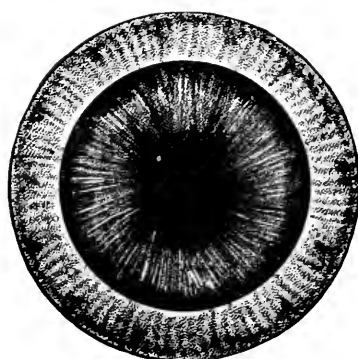


Fig. 2.  
L. E. Nov. 8, 1909.

structed to report to an oculist in the town to which he was going.

In a résumé of the literature since the publication of Pyle's<sup>10</sup> paper I have been unable to find a case of non-traumatic sectoral opacities of the lens with such a rapid and complete disappearance and return to normal vision.

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-111-114 WHITE BLDG.

# A NEW FORCEPS FOR THE REMOVAL OF THE ANTERIOR LENS CAPSULE.\*

BY FREDERICK TOOKE, B. A., M. D.

MONTREAL.

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(Illustrated.)

The operation for the extraction of senile cataract affords more opportunities for the exercise of individuality or of special technique than perhaps any other in ophthalmic surgery. The point of incision, the size of the corneal wound, the presence or absence of a conjunctival flap, and the advisability of performing an iridectomy are some of the features the significance of which receives various interpretations by different operators.

Regarding the treatment of the lens capsule, three methods may be said to be adopted:

1. Puncturing the capsule with a cystotome, with a subsequent emucleation of the cortex through the aperture thus formed. This method is frequently combined with the employment of various types of syringes to irrigate the anterior chamber.

2. Enucleating the lens in its capsule without puncturing the membrane, a method largely practised by members of the Indian Medical Service.



3. Extraction of the lens cortex from its enveloping capsule after a segment has been removed by means of forceps, a procedure the importance of which I, with many others, have already pointed out.<sup>1</sup>

A combination of the first and last mentioned methods in the form of a peripheral capsulotomy, with a cystotome, and the withdrawal or removal of the segment of capsule with forceps, is frequently attended with good results.

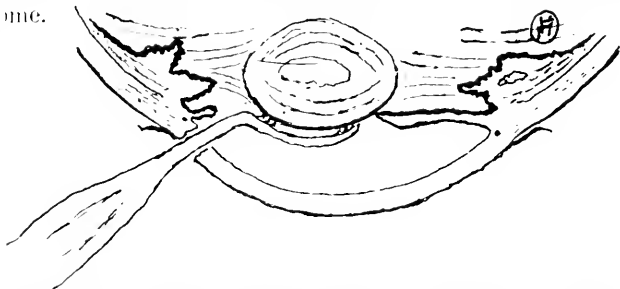
It is, however, not my intention to criticise these various methods, but rather to confine myself to the description of an instrument which I have designed for the removal of the anterior lens capsule, and to which I made a partial reference in my paper of last year when advocating the employment of capsule forceps in the extraction of the senile form of cataract. These forceps were made

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1. Ophthalmology, October, 1909.

for me from measurements and sketches by Messrs. Wulffing-Luer, of Paris, as well as by Messrs. Hardy & Company of Chicago, to whom my thanks are due for the care in which they have followed out my directions in detail.

The instrument, you will notice, is L-shaped, the handle, which gradually tapers towards the end, being about 8 cms. long. At a point in the center of one handle is a buffer-pin which fits into a small aperture in the arm of the handle directly opposite. A shoulder on this pin prevents too strenuous pressure upon the delicate extension blades, exact apposition being assured at the same time. The extension blades of the instrument and the part which forms the arm of the L is made of very finely tempered steel, welded to the handles at an angle of 120 degrees. These extension blades are the part of the instrument employed within the anterior chamber; they are curved concavely below, the degree of concavity having been obtained by actual measurement of a series of human lenses. This curvature permits a uniform pressure over the whole of the lens surface and consequently upon the zonule of Zinn, a feature less likely to produce dislocation than when all the force of a puncture is exerted at one point only, as in the case of the cystotome.



At the toe and heel of these blades two sets of tiny interlocking teeth have been set which allow the operator to obtain a free hold of the underlying capsule. A careful measurement of the pupillary areas from microscopic sections of 52 eyes which I have prepared and mounted shows that the diameter of the average pupil, post mortem, is 6.66 mms. By subtracting 1.66 mms. from this for the space occupied by the teeth, I have a space of 5 mms. between these for the size of the average segment of capsule, the removal of which, will afford a clear pupillary area.

My experience with the instrument has been quite satisfactory, one case in particular showing it up to good advantage. An extra-

tion of a senile cataract was performed in a woman whose vision had always been poor, but which had recently been reduced to hand movements. No details of the fundus could be obtained, but projection of light and tension were normal. After the initial corneal incision, I removed a large segment of the lens capsule with these forceps and floated it off into distilled water for purposes of demonstration. When the lens was removed no irrigation was necessary and the wound healed without any trouble in the usual time. Six weeks later, when doing a post-operative retinoscopy, I was surprised to find that I had been dealing with a myope of about 8 D; her vision being 6/21, with  $180^{\circ} + 1.00 + 2.00$ . That her ultimate visual acuity was not more could be clearly seen to be due to choroidal changes about the macula and optic disc, a condition which had no doubt attended her myopia for years past. The fact that one was able to obtain such an improvement in vision without complication in a case where one would be naturally anxious regarding the escape of a somewhat fluid vitreous would endorse my procedure in employing a capsule forceps of the model which I have just described.

Two provisions are, however, made before recommending the forceps. In the first place, one has to be reasonably certain of a definite element of control of good behaviour on the part of the patient. An involuntary spasm of the eye with a marked deviation in its direction, with the tips of the forceps within the chamber, would most likely result in a dislocation of the lens and at the same time induce, if not actually promote, an escape of vitreous. Again, in a case of hypermature cataract where, in addition to the semi-fluid condition of the outer lamellae of the cortex, a weakness or degeneration of the suspensory ligament exists, more conservative treatment with the cystotome is a single puncture, anticipating at the same time a post-operative discission, will frequently procure the best results. The very slight pressure even of the cystotome in such cases may be sufficient to break through the friable ligament and dislocate the lens into the vitreous.

A longer and more continuous use of this instrument, however, must be made before judgment is definitely passed upon it. In the meantime my thanks are due to Doctor Casey Wood of Chicago, as well as to Doctors Stirling and Byers, of Montreal, for the assistance and encouragement they have given me in employing these forceps in a number of their cataract extractions.

## Reports of Societies

### SECTION OF OPHTHALMOLOGY—COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting December 16, 1909.

DR. WILLIAM ZENTMAYER, Chairman, Presiding.

#### **Pemphigus of the Conjunctiva.**

Dr. Edward A. Shumway exhibited a case of Pemphigus of the Conjunctiva, in association with extensive involvement of the scalp, trunk, hands and feet, and of the mucous membrane of the nasopharynx. There was a broad symblepharon of the inner third of the lower lid and a gradual extension of an opaque tissue over the entire corneal surface. The patient had been under treatment at the University Hospital, in the service of Dr. de Schweinitz, for a period of seven months, and the occurrence of fresh lesions had been studied. At times they appeared as bulke the walls of which had ruptured, and at others they presented themselves in the form of ulcerated areas covered with grayish-white membranes. The scalp and trunk were badly scarred, and the nails of the fingers and toes had been nearly all lost.

Dr. Walter L. Pyle stated that during the last ten years he had seen two cases of pemphigus of the conjunctiva, in both of which the diagnosis was confirmed by competent dermatologists. All treatment, including the modern methods of phototherapy (except radium) were used without benefit, the disease progressing steadily to the destruction of vision. He believed the prognosis of this condition to be hopeless; and he felt that he would be disposed to question the verity of the diagnosis in those cases in which it has been reported that improvement has followed special forms of treatment.

Dr. Zentmayer asked Dr. Shumway whether he had considered the advisability of using the X-rays. He said that recently at the Denver Society Baue had shown a case where, the diagnosis at first in question but seemingly confirmed by the course of the case, this method of treatment while at first unsuccessful, permanently arrested the progress of the disease after an application which produced a severe reaction lasting two weeks.

Dr. Shumway replied that Dr. de Schweinitz had advised against operative interference, and that Dr. Zentmayer's suggestion might be adopted.

#### **A Case of Quinine Blindness.**

Dr. de Schweinitz presented a patient with the following his-

tory: A man, aged forty years, took, eight months prior to his examination, a large but unknown quantity of sulphate of quinine. Within half an hour, preceded by nausea and vomiting, he became entirely blind and remained in this condition for fourteen hours. At the expiration of this time central vision began to return and was gradually restored, but defective peripheral vision and marked night-blindness continued to be prominent symptoms. Examination eight months after the ingestion of this toxic dose of quinine revealed a visual acuteness of 5/5 of each eye; decided atrophic pallor of each optic disc; very narrow retinal arteries which in many places, especially near the discs, showed an apparent thickening of the perivascular lymph sheaths; some diminution of the caliber of the retinal veins, more evident in the right than in the left eye; and great contraction of the visual fields to within  $10^{\circ}$  of the fixation point. Within the narrow fields color perception was accurate; the light-sense, tested with De Wecker's photometric types, was  $L =$  six-tenths. In addition to the contracted visual fields, there were symmetrical areas in the periphery of each temporal field of preserved vision. This area in the right field was a little larger and in the left field a little smaller than the areas of preserved central visual field.

#### **Thiersch Graft on the Bulbar Conjunctiva After One Year.**

Dr. de Schweinitz exhibited a patient whom he had shown to the Section exactly one year ago, upon whose bulbar conjunctiva he had planted a Thiersch graft to cover the defect left after complete excision of a recurrent pterygium. The result of this operation had been entirely successful and the graft had remained firmly in place, with no change except a vascularization of its inner third, so that it closely resembled the surrounding mucous membrane.

#### **A Case of Osseous Tumor of the Orbit.**

Dr. Howard F. Hansell presented the case history of a young woman who presented the usual signs of a growth in the orbit: proptosis down and out, limitation of movement, pain, and diplopia. The pupil was moderately dilated but responsive. Vision was subject to variations of acuity. A tumor, the character of which could not be determined, could be felt in the upper, inner angle of the orbit. It was thought to be sarcoma from the frequency of this form of tumor in this situation, and immediate operation was advised. Through an incision below the brow and dissection of underlying

tissues a round, bony growth, the shape and size of a horse chestnut and attached by a pedicle to the underlying bone, was uncovered and by means of a chisel and mallet removed. Recovery was complete in a few days. Three months later the exophthalmus had disappeared, movements in all directions, except in those controlled by the superior oblique muscle, this muscle having been divided at the time of operation, were restored. Diplopia, in the lower outer part of the field only, remained and was easily and unconsciously overcome by compensatory position of the head. The patient had had chronic nasal catarrh for many years. Perforation through the ethmoid plate had led to chronic periostitis, and the gradual deposit under the periosteum of bone cells had eventually assumed the proportions of a tumor.

### **Optic Atrophy Following Neuroretinitis the Result of Chlorosis.**

Dr. Wm. Campbell Posey exhibited a young Hebrew girl with moderate optic atrophy in both eyes. He had reported the case in July last before the American Ophthalmological Society as an instance of intense neuroretinitis as a consequence of chlorosis, the blood at the height of the neuritis showing 65 per cent hemoglobin. The patient had rapidly improved under iron, and the vision which had equalled counting fingers at one foot in the right eye and six-twelfths in the left rose in a few months to six-sixtieths in the right and six-ninths in the left eye. At this time, about six months after the inception of the ocular process, there is surprising slight optic atrophy, and uncorrected vision equals five-ninths in each eye. In addition to the atrophy of the nerve, there is considerable choroidal and retinal disturbance between the macula and the disc in the right eye.

Dr. Zentmayer asked Dr. Posey whether there was much headache or other symptoms of increased intracranial pressure, as he thought the nerve head had more the appearance of a papillaedema due to that cause than had the first case. This might be explained by an edema of the brain secondary to the anemia.

Dr. de Schweinitz regarded the result in Dr. Posey's patient as an extremely interesting and important one from the therapeutic standpoint; but called attention to the fact that the disappearance of an optic neuritis or papillaedema under the apparent influence of the administration of iron and its preparations did not necessarily



prove that the optic nerve lesions had been due to the anemia. It was possible that the choked disc or optic neuritis might in some of these patients be attributable to an intracranial tuberculous process, and the anemia be a secondary one. During the period of iron administration the tuberculous process might grow less active or subside, the intracranial pressure diminish, and the nerve-head swelling disappear. This improvement of tuberculous lesions as the result of the exhibition of iron Dr. Stengel had pointed out occurred in other portions of the body, and might therefore take place in the brain, or its membranes. Nevertheless, Dr. Posey's admirable result indicated strongly how carefully the study of optic nerve lesions should be made before resorting to radical, especially operative, measures for their relief.

Dr. Posey in reply stated that the patient had not suffered from any severe headaches.

Dr. Emory Hill (by invitation) said that the signs elicited at the apex of the right lung were suspicious, but not sufficient to warrant a diagnosis of tuberculosis.

### **Tubercle of the Ciliary Body.**

Dr. Posey also exhibited a case of probable tubercle of the ciliary body in a male negro, aged forty years. The patient had always been healthy, but confessed to several attacks of gonorrhea. He denied a specific sore. There was no family history of tuberculosis, and a physical examination of the patient revealed no evidence of the disease elsewhere in his system. The left eye, the seat of the disease, was moderately injected. The cornea was steamy in the interstitial lamellæ below, the opacity being triangular in form and made up of a series of grayish-white rounded and crescentic areas, unlike the typical deposits of descemetitis. The iris was thickened, and the pupil irregularly dilated from the atropine which had been used, owing to the adhesion of the iris with a large grayish-yellow mass which projected into the pupillary area from behind the iris. The mass was avascular, but was covered in places by iris pigment which had remained adherent to it as the synechia gave way. Tension was normal. Von Pirquet test showed a local reaction. The temperature rose to 101° after the test, but this was considered of no importance, as the temperature had been 100° on admission.

Dr. Hansell thought the difficulty of diagnosis from the clinical signs was sometimes great, for the resemblance between tubercles

and gummata in their early stages was misleading. A patient recently admitted to the Jefferson Hospital for tuberculous iritis, with the supposed characteristic multiple little tumors, was relieved entirely of the ocular symptoms and total disappearance of the tumors in a few days by mercurial inunctions, potassium iodide, and sweat baths, in addition to the usual local remedies.

Dr. Posey, closing, said that he thought it was often possible to differentiate tubercle and gumma of the iris clinically, a grayish-white and avascular nodule being usually a tubercle, while a yellow vascular one was a gumma.

### Unusual Form of Congenital Cataract.

Dr. Zentmayer presented a patient, aged forty-three years, with a peculiar type of congenital cataract. In the lens of each eye there is an irregular, disc-like, grayish-white opacity with a pinhead-sized central white dot above and to the inner side of the center of the pupil at a deeper level than the iris plane. This is surrounded by a grayish mottled opacity. Under mydriasis the surrounding opacity is seen to extend almost to the equator of the lens. The latter is very thin and highly refracting, appearing as a fine silver line. The whole shrunken lens is dislocated upward and inward. In the L. E. the opacity is not so deeply placed and the luxation is not so great. V. R. E. =  $11\frac{1}{2}$ /LX. L. E. =  $1\frac{1}{2}$ /LX.

The L. E. was operated upon because of the poorer vision. With a knife needle the opaque disc was picked off and fell into the posterior chamber. No marked improvement in vision following this, a discission was later done. An intense iridocyclitis was set up, which persisted for six weeks. There was no improvement in vision.

Dr. Zentmayer classed the case with those cases of congenital cataract due to a faulty development of the nucleus of the lens (Collins). In section these lenses are seen to be flattened antero-posteriorly. There is a round mass on either side connected by a band. In the central flattest part of the lens a laminated mass is situated, similar to anterior polar cataract. It extends back to the posterior capsule, no lens substance intervening. Surrounding this there is lens matter.

Dr. Turner asked Dr. Zentmayer whether the cataractous tissue was hard to cut, and whether the use of a keratome and evacuation of the lens material would not be preferable to an iridectomy or discission.

Dr. Posey asked what became of the central plug of lens matter present and that the disc-like plug fell behind the iris; but he thought that this foreign fragment of lens matter had occasioned the irritation which was present after the operation.

Dr. Zentmayer, in reply, said there was very little cortical matter present and that the disc-like plug fell behind the iris; but he did not regard it as responsible for the iridocyclitis.

### **Detachment of the Retina.**

Dr. McCluney Radcliffe presented for study a boy, aged eight years, who had been sent to him at the Wills Hospital the previous day with a history of blindness of the right eye of several weeks' duration.

There was no history of injury or disease. Examination of eye showed the cornea to be normal, iris discolored, pupil 4 mm. and faintly reactive, but it dilated regularly.

A bright-red membrane completely obscured the fundus. The upper temporal portion of the membrane was comparatively free and waved on movement of the eyeball. The extreme lower nasal quadrant of membrane was of a dull gray color.

There were no bloodvessels on the membrane, but several minute white lines extended partly across it.

The hemorrhage seemed to have penetrated the stroma of the membrane, but had not passed through it, as there was no blood anterior to it.

The tension was slightly lowered. The tentative diagnosis was detachment of the retina, probably the result of hemorrhage. The left eye was normal. Vision of O. S. with correcting lenses = 20/20.

Dr. Posey stated that he had had an opportunity of studying the case with Dr. Radcliffe, and thought that the simplest explanation of the condition was that the patient had suffered a previous trauma, which he had forgotten, as a consequence of which the retina became detached, and that the red appearance was the result of hemorrhage which had subsequently occurred into the retina. Since his attention had been called to the fact that the funnel-shaped depression which is seen in cases of detached retina seemed to be absent in this case, he was rather inclined to believe that it might be that the membrane was not the retina, unless indeed, the temporal half which floated about so freely had fallen

over upon the nasal portion and obscured the depression of the funnel created by the insertion of the retina round about the optic nerve. He thought the discoloration of the iris indicated that the condition had been present for at least some months, while the somewhat lowered tension might be regarded as evidence against the presence of a neoplasm. He had never seen another case presenting exactly the same conditions.

Dr. Shumway said that in making a differential diagnosis the condition of so-called "pseudoglioma" should be considered as a possibility. The membrane floating behind the lens, which was evidently the result of a recent hemorrhage, effectually concealed the interior of the eye, except on the nasal side, and the grayish mass in this position suggested the appearance of an organized exudate rather than the detached retina. The age of the child, and the diminished tension of the eyeball spoke also against intra-ocular tumor, and in favor of such an exudate.

Dr. Posey said that in opposition to the theory that the condition was one of ordinary pseudoglioma, was the absence of any causal condition which might have occasioned a uveitis. There had been no meningitis or other illness which could have provoked a metastasis, while it seemed scarcely likely that if the condition had arisen in intrafetal life the child could have attained so advanced an age without giving earlier evidence of the opacity within the eye.

Dr. Zentmayer stated it was not necessary to invoke a traumatism to explain a hemorrhagic origin for such cases, as Mr. Nettleship has shown by microscopic examination that total detachment with subsequent appearances of pseudoglioma in children after the exanthemata, especially measles, is frequently due to subretinal hemorrhage.

Referring to Dr. Radcliffe's patient, Dr. de Schweinitz said that, subject to correction as the result of an opportunity for more exact examination, the condition might represent membranes which had extended into the vitreous as the result of the metamorphosis of fibrinous exudations or hemorrhages, very much as the same state of affairs arises in the so-called proliferating retinitis. Under such circumstances, as was well known, detachment of the retina, opacity of, and hemorrhage into, the vitreous and on the membranes were often complicating conditions. Dr. de Schweinitz detailed the case history of a patient whose right eye had at one time presented appearances somewhat resembling these in the eye

of Dr. Radcliffe's patient, which years later, the eye being entirely quiet, signs of inflammation never having been present, showed in the posterior half of the vitreous dense masses of bluish-white or white color. Dr. de Schweinitz agreed with previous speakers that the presence of a new growth was unlikely.

### **Preretinal Hemorrhage.**

Dr. James Thorington presented a patient, aged thirty years, who was first seen by him November 20, one-half hour after his right eye had become almost blind from intra-ocular hemorrhage. Previous to this occurrence each eye had enjoyed normal vision so far as he knew.

The left eye was perfectly normal, but the right fundus showed an unusually large subhyaloid hemorrhage which occupied the entire macular region and extended upon the temporal half of the disk. Dr. Thorington referred to the fact that this condition was most apt to occur in myopic eyes or in eyes with vascular changes. In his patient, however, the eyes were not myopic, and the condition had not developed as the result of trauma. The patient had been sleeping for an hour just previous to the onset of the hemorrhage. Manifestations elsewhere in the economy prompted the vigorous use of mercury and iodides.

The ocular conditions had improved, likewise, the patient's general condition.

### **Unusual Vascular Changes in the Retinal Vessels Associated With Degenerative Areas Resembling Those Seen in Retinitis Circinata.**

Drs. G. E. de Schweinitz and T. B. Holloway reported the case histories of two patients, aged nineteen and twenty years, who presented strikingly similar unilateral ocular manifestations. In each case there was distinct inequality in the caliber of the vessels, with aneurysmal dilatations mostly confined to the finer arterial twigs. These changes were associated with small free hemorrhages and whitish areas of degeneration probably due to fatty changes and resembling those seen in Retinitis Circinata. In both cases these areas formed an incomplete ring at the posterior pole of the eye, while in the one case similar irregular patches could also be seen in the periphery of the temporal portions of the fundus.

In each case there was some intestinal disturbance and suspicious signs at the apex of the right lung.

T. B. HOLLOWAY, M. D.,

*Clerk.*

Meeting, January 20, 1910.

DR. WILLIAM ZENTMAYER, Chairman, Presiding.

### Optic Atrophy the Result of Trauma.

Dr. McCluney Radcliffe presented a case of *Optic Atrophy the Result of Trauma*, with the following history: On November 18, 1909, while the patient, a carpenter, was working on a scaffold thirty-five feet high, a plank broke, dropping him twenty-five feet to a platform, from which he pitched forward, falling an additional ten feet and striking on the right side of the head and face. He remained in a semi-conscious condition for nearly eighteen hours.

Both eyes were closed and disclosed from the contusion. The right eye remained closed for three or four days; and when he was able to open it he discovered the eye was blind. He had severe headaches for several days, worse over the right eye.

On his admission to the Wills Hospital, on November 29, 1909, eleven days after the accident, he presented the following condition: There was a slight contusion of the right orbital region, small, sub-conjunctival hemorrhages on the temporal side of the right eye, probably due directly to the fall; cornea normal, pupil 5 mm.; no response to direct light, but reacted consensually; no perception of light.

The ophthalmoscopic examination showed disc decidedly pale, veins somewhat engorged, arteries narrow and pale, and capillaries almost entirely absent.

The diagnosis was made of optic atrophy the result of traumatism, probably of fracture of the orbit extending into the optic foramen. The treatment consisted of strychnine, to physiological limit, and negative galvanism, but without benefit. A rather unsatisfactory x-ray examination apparently showed a line of fracture of the roof of the orbit extending into the optic foramen. The left eye was normal in all respects.

Dr. S. D. Risley expressed his interest in the group of cases represented by Dr. Radcliffe's patient. He had reported eight cases of atrophy, and had a ninth case now under observation at the Willis Hospital. Dr. Radcliffe's patient differed from those

he had observed in the rapid onset of blindness and atrophy of the optic nerve. In his own cases the impaired vision had first been noticed from four to six weeks after the original injury, and the atrophy had progressed to total blindness. In the case at present under observation the retinal vessels were reduced to gray-white stripes, seen only on careful study, but traceable to the limit of the ophthalmoscopic field.

Dr. Holloway referred to the observations of Bruns, Walton and Rawlings concerning basal fractures, and mentioned the probabilities of fractures of the anterior fossae to involve the optic nerve as the result of involvement of the optic foramen.

He also referred to the observations of Rawlings that fractures of the base had a tendency to converge toward the body of the sphenoid bone.

He cited the case of one of the attendants at the athletic field of the University of Pennsylvania, who had been struck in the left frontal region by a sixteen-pound hammer, thrown from a distance of seventy feet, that resulted in an extensive fracture of the skull with involvement of the left optic foramen and subsequent optic atrophy.

Dr. Posey cited a case which he had had under observation some years ago which served to show that the prognosis in this class of cases was not always bad. The patient, a male adult, had received a hard blow over the left eye by the occiput of his child's head, while romping with the child in play. About thirty-six hours after the accident he began to suffer considerable pain at the back of the eye, and to notice that the sight was dim. The dimness gradually increased, so that at the end of the fifth day after the accident the eye was totally blind. Ophthalmoscopically there was marked pallor of the optic nerve, and the venous pulse was much accentuated, the veins on the disk and for several diameters off from the disk appearing to almost collapse at the diastole of the heart. Leeches were applied to the temple, the bowels freely opened by salines, and a dram of mercurial ointment rubbed into the body twice daily. Under this plan of treatment vision gradually improved, so that at the end of two weeks it was normal. Dr. Posey said that the loss of vision was probably accounted for by compression of the optic nerve, either by a hemorrhage or by an extravasation, probably the result of fracture, and thought the observa-

tion of the authority quoted by Dr. Radcliffe, that he had not observed hemorrhage into the sheath in any case without fracture, was of considerable significance.

Dr. Ziegler related two cases of head injury that recently applied to the Wills Hospital, in which monocular optic atrophy followed head injuries of the same side. He believed that these cases were analogous to the unilateral optic atrophies following saber wounds of the temple, many examples of which have been observed among the survivors of the Civil War.

He believed that several factors were etiologically active in this condition—fracture of the orbit, effusion, hemorrhage, and plastic exudate. In other words, the optic nerve was strangulated by compression. This, however, would not explain why a more insidious atrophy should develop many years after such an injury. He had seen such a case in private practice, and had been able to arrest the progress of the disease by applying negative galvanism.

These cases may not be so rare as we think. The injury frequently causes unconsciousness, and the patient, through inadvertence or forgetfulness, often fails to furnish the oculist with the facts.

### **Treatment of Gonorrheal Iritis and Arthritis by Vaccines.**

Dr. Edward A. Shumway reported a case of *Gonorrheal Iritis and Arthritis*, which was successfully treated by the injections of gonorrheal vaccines. Doses of 100,000,000 organisms were employed, and after five weeks the inflammation had entirely subsided, the eye was free from congestion, and the tenderness and swelling of the joints had disappeared. Pain and photophobia were relieved two days after the first injection, no local or general reactions were noted, and no abscesses appeared at the site of inoculation. Dr. Shumway made reference to the literature of the subject of the vaccine treatment of gonorrheal infections, and said that the reports indicated that it was not of much value, in fact was somewhat dangerous, when employed in acute gonorrhea and gonorrheal conjunctivitis; in chronic gonorrhea, in the absence of mixed infection, it was of considerable value; in vulvo-vaginitis of children, and in complications, such as arthritis and iritis, it was of very great benefit. In these metastatic conditions, at least, the heterologous or stock vaccines were as efficacious as the homologous strain. Some of the English observers, notably Eyre and



Stewart, advised the use of small doses of not over 1,000,000 to 10,000,000 organisms, but the majority of American authors had employed satisfactorily doses of at least 50,000,000 to 100,000,000. In the presence of a severe arthritis or iritis, as large doses should be employed as the patient would tolerate.

Dr. Walter L. Pyle referred to some original recent French reports in a manuscript that he was preparing for publication, which were in accord with Dr. Shumway's experience and conclusion after a review of the relative literature. At present, it seemed that the gonococcal serums and vaccines were of distinct value in the chronic and secondary manifestations of gonorrhea, such as arthritis and iritis, and of comparatively little value in acute urethritis, conjunctivitis, etc.

Dr. Posey said that he had stated in the communication which he had made to the Section a few years ago, in regard to the administration of antigonococcic serum, that he desired to suspend judgment regarding the value of the serum, for he was not sure that the serum had been properly prepared or administered. He had employed the Mulford preparation, which he now learns was a vaccine and not a serum, and had relied upon his residents to make the test. He had employed the vaccine in at least half a dozen cases, and had not noticed a beneficial effect from it in any case; indeed, in one or two instances he had been rather of the opinion that the reverse was the rule. It is true that the cases in which the serum was employed were of a severe type, a number of them being inflammations of the iris and ciliary body in negroes, whose ocular tissue seem to offer little resistance when seriously infected with any kind of microorganisms. In one of the cases successive crops of boils followed the injections. In view of this experience he was of the opinion that the antigonococcic serum was practically valueless in the treatment of ocular inflammation of metastatic gonorrheal origin.

Dr. Shumway asked Dr. Posey the size of the dose which he had employed in his cases, and said the poor result might be ascribed to an inert preparation, or to too small a dose.

In reply Dr. Posey said that he was not sure in how high doses the vaccine had been administered. The residents had been told to follow the directions issued by the manufacturers of the vaccine, and in several instances the dose had been administered considerably greater than was recommended by them.

### **A Case of Sarcoma of the Orbit in Which the Earlier Stages Simulated Unilateral Exophthalmic Goitre.**

Drs. G. E. de Schweinitz and H. Maxwell Langdon reported the case history of a woman, aged twenty-two years, who gradually acquired left exophthalmos, apparently as the result of a fright, and who was considered by those in charge of her to present the symptoms of unilateral exophthalmic goitre, and who was treated for this condition. Gradually, however, it became evident to those who subsequently examined her that the exophthalmos was dependent upon some orbital involvement. Exploratory operation was suggested, but not carried out, until, by the increase of the exophthalmos, there was marked exposure of the cornea and such evident orbital disease that evisceration of the orbit was urged and consent finally obtained. Exploration by the suborbital route was first tried, and the growth a partially encapsulated tumor 24 to 30 mm. in size, was removed, having sprung from the periosteum covering the upper and outer portion of the orbit. Suspicious tissue, however, was present between the muscles, and was attached to the external rectus muscle; the periosteum was also involved, and there was some erosion of the bone beneath it. Therefore, it was not considered safe to allow the contents of the orbit to remain, and they were eviscerated. The patient made an uninterrupted recovery and rapidly gained in weight and strength.

Microscopically the tumor proved to be composed chiefly of small spindle cells, and in former times would have been classified with the small spindle-celled sarcomas. The character of the cells, however, indicate that the growth belongs to the endotheliomas. The muscle fibers of the external ocular muscles showed chronic myositis, and the external rectus dense infiltration with tumor cells. Some masses of tissue apart from the main body of the growth, and attached externally to the muscle cone, were of similar structure.

The authors called attention to the interesting resemblance of the symptoms of this patient to those of unilateral exophthalmic goitre in their earlier stages, to the long duration of the process, namely, eight years, and to the comparative ease with which the growth had been removed through the suborbital route.

Dr. Langdon stated there was but little to add to the paper which Dr. de Schweinitz had just read. The case was interesting

from a diagnostic standpoint and from the length of time the growth existed without detriment to vision, this function remaining normal until within six weeks of operation, and then as a result of corneal traumatism from exposure between the unclosed lids.

The advisability of a Kronlein operation was considered in the spring of 1908, but for various reasons, chiefly connected with the patient's condition, was not performed. X-ray therapy was tried, and three applications were made, but at the last sitting the effect on the ocular circulation and tissues, especially the conjunctiva, was so disagreeable that further treatment was refused by the patient.

Dr. Posey said that Dr. Swindells and he had reported this case before the Section in 1904 as one of Unilateral Exophthalmos in Exophthalmic Goitre. The girl at that time had many of the symptoms of Graves' disease, and no less an authority than Dr. Spiller considered her to be the subject of that disease. There was a family history of goitre, and the girl herself had an enlargement of the thyroid gland. It is of interest to note that at that time she attributed the prominence of her eye and the swelling in her neck to a fright by a negro. Dr. Posey referred to the difficulty in diagnosis in many cases of orbital growth, and said that the statements of the patient could not always be depended on. That very afternoon he had seen a case of pronounced exophthalmos of the right eye in a girl, aged fifteen years. There was no palpable tumor, and the eye was proptosed directly forward. There was a marked neuroretinitis in the affected eye, with considerable edema of the retina. The mother stated that the protrusion of the eye had appeared first when the child was eleven months old, with some signs of inflammation, but that it had disappeared when the child was four months older, and had not reappeared until six weeks ago, when the present condition began to make itself manifest. The surgeons who saw the patient at the Glasgow Infirmary during the first attack were said by the mother to have rendered a diagnosis of either tumor or abscess of the orbit. Dr. Posey said that he had not had sufficient time as yet to establish a diagnosis, but he questioned whether the mother's statement was correct, and doubted, if the exophthalmos had been present in infancy, that it had wholly disappeared during the thirteen years which had elapsed until the proptosis of the eye was again remarked.

Dr. Zentmayer said that the difficulties in differential diagnosis of orbital troubles was well exemplified in a case seen by him some time ago. A man, aged twenty-four years, had had for about a year and a half an increasing unilateral exophthalmos. The thought that there were periods of remission. This was the one symptom that might have to do with sinus disease. After construction of the nasal mucous membrane he returned on the following day with a handkerchief saturated with a yellowish fluid. The sinuses were then thoroughly explored through a radical operation, and they were found to be free from disease. Vision and fields were good and the optic nerve showed only a slight elevation of the nasal border. Radiographs showed that the roof of the orbit was lower than its fellow. Rather suddenly a marked choked disk developed on the other side, and the nerve on the affected side became somewhat more prominent. An exenteration was performed and a growth was found in the orbit which had probably had its origin in the sphenoid and extended into the orbit and also into the anterior fossa of the skull.

Dr. de Schweinitz, closing the discussion on his own paper, said that the etiological factors in unilateral exophthalmos were often most difficult to determine, especially in the early stages, at this case and those which Dr. Posey had recited well illustrated. He took this opportunity of saying a final word in regard to a patient with unilateral exophthalmos and optic nerve atrophy of the same side, whom he had presented to the Section about a year ago. The inability to reduce the exophthalmos of this patient by pressure had led some of those who had examined her to believe that a growth existed in the orbit or protruded into it from the adjacent sinuses, a condition which Dr. de Schweinitz believed he had, by repeated examinations, excluded. He had suggested that this exophthalmos might be due to intracranial growth in the neighborhood of the third ventricle. At the autopsy a large growth (sarcoma) was found which sprang from the middle fossa of the skull, growing from the periosteum. The orbit and sinuses were entirely free from disease, the resistance to pressure probably depending upon an edema of the tissues in the posterior portion of the orbit. Cases of this character still further complicate the study of the causes of unilateral exophthalmos.

Dr. Langdon, in closing, said that he had nothing further to

add concerning the case, but the idea occurred to him concerning Dr. Posey's case, that granting the history of an early exophthalmos was correct, was it possible that there might be an anomalous early formation of one of the postnasal sinuses, which was enough to produce the first exophthalmos and which drained and now for some reason had again filled.

### **Left Homonymous Hemianopsia in a Worker in Lead.**

Drs. William Campbell Posey and Clifford B. Farr reported a case of Left Homonymous Hemianopsia Occurring in a Worker in Lead.

Dr. Farr cited the following history: The patient was a brass founder, aged thirty-seven years. He had suffered twice from severe lead colic within a year, and previously from "brass-founder's ague." There was a typical blue line on the gums and granular degeneration of the red blood cells. Normal gastric contents; albuminuria and casts. In the last attack there was nocturnal delirium and later a syncopal or apoplectic seizure without convulsions or paralysis, but followed by left homonymous hemianopsia. There was a gradual but complete recovery of vision within ten days.

Attention was especially drawn to the large amount of lead frequently employed in making brass and to the growing frequency of lead intoxication from this source. Dr. Spiller thought that the hemianopsia was probably due to a small hemorrhage in the occipital lobe; the mental symptoms suggested hysteria ("toxi"), but it was thought doubtful if such definite hemianopsia was ever a result of that condition. A toxic origin was also hardly to be considered, whether from lead directly or from uremia. The literature was briefly reviewed.

Dr. Posey said that an examination of the eyes revealed complete left homonymous hemianopsia. Both optic nerves were pale and the retinal veins fuller than normal. The pupils were of equal size (3 mm.), and reacted somewhat sluggishly to light. The Wernicke hemianopic pupillary inaction sign could not be demonstrated. Vision equalled 5-9 in each eye. At the second examination, made a week later, the hemianopsia was found to have disappeared, the fields in each eye being normal for form and color.

Dr. Posey was of the opinion that hemianopsia from lead poisoning must be of rare occurrence, for Lewin and Guillery, in their comprehensive volume on the effect of drugs and poisons on the

eye, mention but five instances where this characteristic loss in the visual field was due to that metal. According to these authorities, the first case of hemianopsia due to lead poisoning was reported by Vater in 1832. The next seems to have been recorded by Westphal in 1888 (*Arch. f. Psych.*, xix, p. 620). In this patient, in addition to the loss in the fields, there was cataract in one eye and optic neuritis in the other. In the third case in the literature, which was reported by Hertel in 1890, there was a left homonymous hemianopsia with narrowness of the retinal arteries and sluggish reaction of the pupils. Hertel attributed the hemianopsia to a lesion in the posterior part of the internal capsule, which had resulted either from a small hemorrhage, in consequence of a general encephalitis, which had been set up by lead, or from a localized ischemia from arterial spasm.

The fourth was reported by Elschmig in 1898 (*Wiener med. Woch.*, 1898, Nos. 27 and 29), in which there was bitemporal hemianopsia in connection with choked discs. The lesion was thought to reside in the chiasm.

In addition to these cases, Bihler (*Archiv f. Augenh.*, No. 40, 1899) cites an extremely interesting case of hemiachromatopsia in a compositor, aged thirty-nine years. The disturbance in sight appeared suddenly in both eyes. Perimetric examination showed that the visual field of the left eye was lost on the nasal side, in the right eye on the temporal side. The hemianopsia was partial, but there was complete hemiachromatopsia. There was slight nystagmus, and both pupils were small. Ophthalmoscopic examination was negative, save for a slight engorgement and tortuosity of the retinal veins. There were no other brain symptoms, and Bihler explained the findings in the fields to a localized neuritis of the left optic tract.

As has been stated by Dr. Farr, the hemianopsia in the case which has been reported before the Section was thought by him and Dr. Spiller to have resulted from a cerebral hemorrhage.

The simultaneous appearance of hemiparetic disturbances in the trunk with the hemianopsia in the cases reported by Westphal and Hertel seems to indicate that the hemianopsia, in at least some of these cases of lead encephalitis, is due to a lesion in the internal capsule.

In conclusion, Dr. Posey called attention to Bihler's belief

that the prognosis for the recovery and restoration of vision is not unfavorable in hemianopsia from lead encephalitis, and this appearance is justified by the rapid disappearance of the loss in the fields in the case which has been reported this evening, as well as in that of Hertel, in which there was a perceptible increase in the size of the fields, even in the short time the patient was under observation.

Dr. de Schweinitz referred to the interest which the ocular symptoms of lead poisoning had excited among the older writers, and to the "mysterious colic of the ancients," attributed by Tanquerel in his well-known work to the action of lead. Saturnine amblyopia had probably been known for three hundred years, one of the earliest accounts being found in a thesis by Henricus Smetius, written in 1611. Lead toxemia, Dr. de Schweinitz said, might produce transient amblyopia not unlike the amaurosis from uremia without fundus lesions, permanent amblyopia terminating in optic nerve atrophy, optic neuritis, retrobulbar neuritis and optic nerve atrophy, various types of retinitis and alterations in the visual field—concentric contraction, central and peripheral scotomas, and hemianopsia, as had been described in the paper of Drs. Farr and Posey. These ocular symptoms, according to systematic writers, may be due to a direct specific action of the lead on the visual apparatus, or to an indirect action, *i. e.*, the lead has produced changes in the brain, cord, kidneys, etc., which are followed by the eye lesions. The temporary amblyopia had been attributed by some writers, *e. g.*, Thomas Oliver, to an anesthetic action of the lead on the retina and optic nerve, by others (Loewe) to a uniform spasm of the arteries of the visual centers and to an edema of the nerve and nerve sheath. As recent investigations, for example, by Pick of Prague, indicate that uremic amaurosis is due to a poisonous action on the cortical centers because when sufficient vision returns to make the test possible typical hemianopsia may be present, which could not be explained by a retinal lesion, the same explanation may apply to lead amaurosis. Dr. de Schweinitz referred also to the interesting relation of hysteria to certain varieties of toxic amblyopia, and especially to hysterical saturnism and to Goinon's review of this subject, who points out that the subjects of saturnism may suffer from hemianesthesia, hemiplegia, and alterations in the visual field, and may be cured by suggestion. Dr.

de Schweinitz agreed with the writers that hemianopsia did not exist as an *enduring* ocular symptom of hysteria, although as a *temporary* phenomenon it had been reported by competent authorities. An interesting observation by Janet, Galezowski, Daguesnet, and others is that between the period of complete recovery of hysterical amaurosis or amblyopia and the period of complete blindness there may be a stage of hemianopsia. Dr. de Schweinitz thought the relation of hysteria and saturnism, especially in its cerebral manifestations, was an important one, and should be well considered in the study of each case.

In conclusion, Dr. Farr referred to the slight symptoms that might result from even extensive hemorrhages into the occipital lobe: in a recent case slight visual disturbances were the only suggestive symptoms during life.

#### **Bitemporal Hemianopsia With Unusual Clinical History.**

Dr. Zentmayer read the notes of a case of Bitemporal Hemianopsia with Unusual Clinical History. The patient had first been seen in the service of Dr. Norris, at Wills Hospital, nineteen years ago, September, 1890, and has been observed to the time of her death by Dr. Zentmayer, and for a part of the time by Dr. Oliver. Mrs. A., aged twenty-seven years, married; had had two children. Complained of mist before the eyes for six months. Had frontal and occipital headache. Menstruation ceased at nineteen years of age. V = 5/L. Contracted form field with bitemporal hemianopsic color defect. Wernicke sign present. Edges of the optic discs hazy, vessels tortuous. Under iodide of potassium vision quickly rose to 5 XV, and remained so until March, 1909. In February, 1891, the form field showed marked irregular bitemporal contraction, but this was temporary, and it was not until October, 1895, that both the form and color fields were typically hemianopic. Little change occurred until March, 1903, when the fields were found to have lost their hemianopic form. In the O. D. it extended in the horizontal meridian from 41 degrees on the nasal to 18 degrees on the temporal; and in O. S. from 30 degrees on the nasal to 18 degrees on the temporal. Central V. had increased to 6 IX in O. D. and 6 VI pt. in O. S. At this time she was examined by Dr. Spiller, who confirmed the diagnosis of a tumor of the hypophysis. There were no marked intracranial symptoms. She had grown very stout and there were symptoms of acromegalia.



Death occurred from pneumonia, November 19, 1909. No autopsy was permitted. Dr. Zentmayer said that the field phenomena were very difficult to explain, but that he thought the failure for color before form could best be explained by supposing an involvement of the papillomacular fibers, although a reference to the anatomy of these fibers did not make this theory convincing to him. While Dr. Spiller's view that the regaining of the fields was due to the growth having broken through into the ventricle, thus relieving the pressure, is probably correct, it made it no more easy of comprehension how fibers whose conductivity had been interfered with from pressure for nineteen years could regain their function.

Dr. de Schweinitz, commenting on the extraordinary interest of this case history, agreed with the essayist that the explanations which have been advanced to explain the improvements in the visual field, even to complete recovery of its extent, after longstanding bitemporal hemianopsia, were not satisfactory, but he had no others that were more satisfactory. He referred to those cases which may begin with paracentral or bitemporal hemianopic scotomas, which gradually broaden into bitemporal hemianopsia, to those in which the original condition of bitemporal hemianopsia may change and result in symmetrical para-central hemianopic scotomas and to chiasmal central amblyopia, simulating central toxic amblyopia as it has been reported by Nettleship. Paracentral or hemianopic scotomas evidently indicate that the lesion is confined to that point on the dorsal surface of the chiasm where the papillomacular fibers of the crossed fasciculus are interwoven.

Dr. Shumway, discussing Dr. Zentmayer's remarks upon the appearance of hemianopic disturbances of color before those of form, thought that in accounting for them we must assume separate conducting fibers in the visual tracts for the transmission of color sensations to the visual centers, which are more sensitive to pressure or inflammation than the form fibers. This would explain also the early contraction of the fields for color in optic atrophy or neuritis. He referred to a case in which, after a fall from a carriage upon the head, the patient had become unconscious, and remained in a dazed condition for two weeks. She was said to have been blind in one eye for six months. Examination after a lapse of six years showed 6/5 vision in each eye, full form fields, but a reduction of the color fields within the 10-degree circle. In such a case we must assume that there was an exudate at the base of the skull.

which involved the optic nerve, and affected severely the more sensitive color transmitting elements.

Dr. Zentmayer (closing) said he was not prepared to accept the view of different fibers for the transmission of color than for form, and thought that the loss of color before form might better be explained by supposing a difference in the degree of involvement of the same set of fibers.

T. B. HOLLOWAY, Clerk.

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### COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting of December 18, 1909, in Denver.

DR. MELVILLE BLACK, Presiding.

#### Lymphangiectasis Conjunctivae.

Dr. G. F. Libby presented a laundress, aged 56, who had first come for examination, September 16, 1908, because of an acute toxic conjunctivitis of each eye. She had been using, on her own initiative, a commercial "collyrium," the formula of which is given by its manufacturers as: Boric acid, 8 grains; sodium biborate, 5 grains; zinc sulphate, 1/24 grain; sodium salicylate, 1/16 grain; ext. hamamelis dist. et mucilago sassafras aa, 15 minims; aqua laurocerasi et aqua destil. aa. q.s. ad 1 ounce. Most of the contents of the bottle had formerly been used with the effect of a soothing collyrium, and it had then been set aside for a while. On the morning in question the solution was used in an eye cup, as a douche for both eyes. Immediately intense conjunctival chemosis and swelling of the nasal mucous membrane resulted. Holocain solution, 1:120, and adrenalin chloride, 1:10000, were dropped into the conjunctival sac every two to four hours for ten days. The inflammation had largely subsided in two days, and entirely so in ten. Examination of the remaining contents of the bottle by Dr. Edward C. Hill revealed crystals, epithelium, but no mold. The liquid was slightly cloudy and smelled of soap. Dr. Hill expressed the opinion that the irritation of the conjunctiva and nose was a chemical one, due to the crystals found.

On December 9, 1909, this patient awoke to find a subconjunctival hemorrhage involving the outer half of the globe. On the horizontal meridian, midway between the corneal limbus and the external canthus, the ecchymosis was of a bluish black appearance for a space 5 mm. in diameter, and in the center of this area was a thin cyst, 1x3 mm., filled with straw-colored fluid. This area

was sensitive to pressure and rather painful. When shown before the Society the extravasated blood had been largely absorbed, but the lymph-cyst containing a minute clot of blood remained unchanged in size, although somewhat less tender. There was a history of previous subconjunctival hemorrhages, but not with lymph-cysts or pain.

#### DISCUSSION.

Dr. Black had excised a conjunctival lymph-cyst, with resulting obliteration. He spoke of an old man with blood pressure of 95 mm., who had experienced very many subconjunctival hemorrhages, and the same occurrence in a plethoric young woman of full habit with blood pressure of 190 mm.

Dr. Jackson would excise, thus relieving the engorgement of the lymph vessels. He had seen several old people die of cerebral hemorrhage subsequent to subconjunctival ecchymosis, but only one person as young as 40. He thought the condition of the retinal arteries would forecast danger to the brain better than the blood pressure. Subconjunctival hemorrhage was of prognostic import in only about half the cases.

Dr. Coover would have urinalysis made. He had noted, in young people, a blood pressure of 165 to 170 during an attack of migraine, with a drop to 135 to 145 after the headache subsided.

Dr. Ringle spoke of several subconjunctival hemorrhages in a patient with blood pressure of 165, with normal kidneys.

Dr. Marlbourn had observed a man of 65 with frequent subconjunctival ecchymoses, in whom death occurred 18 months later.

Dr. Boyd always took the blood pressure in cases of subconjunctival hemorrhage, and had often found diabetes present. He noted an average blood pressure of 110 to 115 in Leadville, at an altitude of 10,190 feet.

Dr. Walker had observed subconjunctival hemorrhage accompanying whooping cough, constipation and Bright's disease, but had seen no cerebral bleeding associated with it.

Dr. Stevens had seen many cases between 25 and 30 years, the hemorrhage under the conjunctiva having occurred in the night. Other members had noted this phenomenon, and the rarity of cerebral hemorrhage.

Dr. Sedwick had noted several subconjunctival ecchymoses in a person, aged 61, who was a heavy consumer of nitrogenous food. Dizziness, to the point of falling, gave added discomfort.

**Obstruction of Central Artery of Retina.**

Dr. Black reported a case of obstruction of the central artery of the retina, with resulting blindness. He could evacuate the blood from the arteries by light pressure, and from the veins by firm pressure. In retinal arterio-sclerosis with high blood pressure, he had found decided pressing upon the globe, as from the rubber eraser on a lead pencil, was necessary to produce venous pulse; whereas, with low blood pressure, the venous pulse was produced by pressing lightly and heavier pressure was required to bring about the arterial pulsation. Dr. Black thought these points of some value in the study of vascular conditions and asked the members to note and report their observations along these lines.

**Steel in Vitreous.**

Dr. Bane reported the removal by the Haab magnet of a triangular piece of steel about 5 mm. long, and 2 mm. wide on its sides, sharply pointed at two ends. It had lodged in the left eye of an adult, in the forenoon of December 18. Attempts at removal with a weaker magnet had failed, but the use of the Haab magnet, with Dr. Walker's assistance, proved successful in the afternoon of the day of injury. The foreign body made a rent about 4 mm. long in both iris and lens. The vision was reduced to fingers at 3 feet, but there was only slight pain, which was increased on bringing the magnet to the eye. During the use of one magnet there was hemorrhage from the upper part of the iris, and from the lower portion while the other was employed, due to the drawing forward of the steel splinter. This also caused a pushing forward of the cornea, by dragging the lens forward. The foreign body was finally brought out through the wound in lens, iris and cornea, by aid of the Haab magnet.

**DISCUSSION.**

Dr. Black had successfully managed such cases by iridectomy, washing out lens matter and then securing the piece of steel by the magnet.

Dr. Walker thought this feasible in cases of old, but not of fresh injury.

**New Stitch Scissors.**

Dr. F. R. Spencer exhibited his scissors for removing stitches from conjunctiva or lids. (See description and cut, *Jour. A. M. A.*, Nov. 20, 1909, page 1736.)

**Major Smith's Clinic.**

Dr. Jackson read communication from Drs. D. W. Greene and D. T. Vail, describing their work with Major Smith at Jullundar, India.

GEORGE F. LIBBY, Secretary.

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Meeting of January 15, 1910, in Colorado Springs.

DR. JAMES A. PATTERSON, Presiding.

**Binocular Microphthalmos.**

Dr. D. H. Coover presented a youth of eighteen with very small globes, clear well-formed corneas  $5\frac{1}{2}$  mm. in diameter, congenital upward coloboma in each iris, congenital cataracts, nystagmus, and normal tension. Dr. Coover had noted no change in the condition in the twelve years the case had been under his notice. He needled one lens in August, 1909, and the same lens again in December, with success. With +20 spherical lens vision was now about 1/35 in this eye.

**DISCUSSION.**

Dr. Friedmann said that the coloboma was usually situated below, rather than above. He had seen a lens extracted in such a case, the vitreous being fluid. Phthisis bulbi followed.

Dr. Jackson thought the perfectly clear cornea remarkable, and that the ocular defects had probably been intrauterine in origin. He estimated the hyperopia to be 30 to 40 diopters.

**Unusual Macular Appearances.**

Dr. E. R. Neepor presented a woman, aged 40, with delicate pigment changes resembling bone corpuscles in shape, distributed around each macula for a radius of  $1\frac{1}{2}$  disk diameters; the pigmentation being more marked in the left eye. Vision, however, was 20/20 in each eye. There was a history of nervous instability, with paralysis of the vocal cords at one time. Dr. H. B. Young, of Burlington, Iowa, had noted no fundus trouble in examining this patient in July, 1900.

**DISCUSSION.**

Dr. Jackson thought the macular changes were probably congenital.

Dr. Coover considered the condition the result of an old central choroiditis.

Dr. Patterson had the impression that it was an old retino-choroiditis, slowly progressing. He had lately seen such a case, ten

years subsequent to the fundus disturbance, in which there was slight diminution of vision, and halos suggestive of glaucoma.

### **Annular Pigmentation of Nerve Head.**

A healthy woman of twenty was shown by Dr. Neeper. She had complained of an unusual amount of "burning back of the eyes." R. V. = 20/20 — 2 letters. L. V. = 20/40. The vision was raised to normal by lenses, and the asthenopia was soon relieved. Ophthalmoscopically, the left disk showed a complete and very distinct ring of pigment, obscuring the outer fourth of its face. The same was true of the right disk, but in a markedly less degree. The eye grounds showed, more or less uniformly, marked evidence of old inflammation, but were free from unusual pigmentation. The vessels were tortuous, with venous and arterial calibre well balanced, and the blood pressure was 110 mm.

#### **DISCUSSION.**

Dr. Sedwick had recently seen quite extensive central pigmentation of the disk.

Dr. Sisson called attention to Parsons' two reported cases of pigmentation extending on to the disk.

Dr. Jackson considered the case presented to be congenital pseudo-neuritis, with the center of the disk elevated 2 mm., and the fundus unusually stippled. He thought the pigmentation marked and worthy of reproduction in a colored plate.

### **Retino-Choroiditis Juxta Papillaris.**

Dr. J. A. Patterson showed a railroad employé who had first consulted him December 12th, 1899, on account of eye-strain. Correcting lenses gave vision of 5/6 + in each eye. He had slight internal strabismus of the left eye. That eye had a normal fundus excepting that the fovea was crater shaped with a honeycombed bottom, and midway between it and the nerve there were three small spots of choroidal pigment, with no choroidal atrophy. The right eye showed old spots of retino-choroiditis. The patient attributed his poor eyesight to measles when 4 or 5 years of age. He was not again seen until December 21th, 1909, when R. V. with correction = 5/15, L. V. = 5/30. The retinal veins were somewhat contracted and very wavy in both eyes. The right macula was filled with pigment, which extended in a series of patches down and out. The pigment was heaped but was under the retinal vessels, and there appeared to be little choroidal absorption underneath these patches. In the left eye there was an area along the superior temporal vessel

with two large and one small pigment spot upon it, and there was pigment heaping around the macula. Subsequently it was found that two instillations of 1% homatropin induced slight increase of tension in the right eye, that the pupil remained large, and did not become normally contracted in two days. Eserin 1/4% was then used, the tension soon dropping to normal.

Dr. Patterson thought this case had many characteristics of the retino-choroiditis juxta papillaris of Edmund-Jensen (Ophthalmic Y. B. 1909). The location of the patch in the left eye was characteristic. The notching of the field for red was almost identical with the illustration in the year book. The absolute scotoma for form covered the same area as the red, but was broader and more irregular at the fixation point. Neither the scotoma for form nor that for color extended to the periphery of the field. It must, however, be remembered that in Cunningham's case the scotoma did not extend to the periphery.

#### DISCUSSION.

Dr. Jackson thought the classification reasonable; that the condition was old, and due possibly to measles during childhood or possibly to syphilis. As corneal opacities clearing in childhood, sometimes reappear in old age, so might retinal disturbances.

#### **Xanthoma.**

Dr. Patterson also presented Mrs. H., who had suffered from this discoloration for several years. The spots were symmetrically disposed, appearing over each inner canthus and along the upper and lower lid. They appeared as slightly elevated, butter-yellow, ovoid patches. Dr. Dougherty, of Philadelphia, had removed a patch from the left eyelid about two years before, which returned. Considering the return of these patches almost certain after excision, and no other satisfactory method being then known to Dr. Patterson, he corresponded with Dr. Foerster, a dermatologist in Milwaukee, concerning their treatment. At his suggestion, between February 3 and April 28, 1908, eight applications were made of carbon dioxid snow, the duration of the applications as well as the amount of pressure exerted being greatly increased over the directions given by Dr. W. A. Pusey. That this necessity was due to Colorado altitude was possible. Great improvement resulted; there had been so far no return, although the largest patch on the lower right lid still showed somewhat; but part of this discoloration was believed to be scar tissue.

## DISCUSSION.

Dr. Cooper referred to the use of chromic acid for relief of xanthoma.

Dr. Neepor had used the electro-cautery many times, with only one relapse; and believed all discoloration could be thus removed with practically no resulting scar tissue. As a local anesthetic he injected a mixture of 5 drops of 1% holocain, 3 drops of 5% cocaine and 3 drops of 1:1000 adrenalin chlorid.

Dr. Friedlmann said that in a large percentage of these cases a condition of cutis laxa was present. He believed the spots of discoloration could be dissected out, with no appreciable scar and without recurrence. He also thought some of the relaxed skin could be excised with advantage.

**Ciliary Wound: Result After One Year.**

Dr. Patterson again showed a negress, aged 41, first presented to this Society in January, 1909. This patient had suffered from puncture of the left eye, at that time. The point of a hat pin passed through the cornea, penetrated the anterior chamber, nicked the lens capsule and emerged over the ciliary body, which it traversed. When first seen, three days after the accident, it was deemed advisable to excise protruding iris. This case was again shown to illustrate the tolerance, at times, of the ciliary body to injury. The eye had remained quiet for a year and there was no increase of the lens opacity.

**Simplicity of International Standard for Visual Acuity.**

Dr. Jackson called attention to the action of the International Ophthalmological Congress at Naples, in adopting almost unanimously the report recommending, as the standard test for vision, the incomplete ring, of such size that the diameter of the ring subtends an angle of five minutes, the width of the ring being one-fifth its diameter, and the break in the ring the same as its width.

The test is based on the principle of the "minimum separabile," the correct basis for practical tests of visual acuity. Vision is measured not by the size of the object seen, but by the distance by which two points must be separated to be seen as separate points, as compared with their distance from the observer; that is, the angle of their separation. The apparent size of the brightest fixed star in the heavens and that of one just visible to the naked eye, is the same; either, when magnified by the strongest telescope, remains a simple point. But if two stars are close together, whether



they be bright or faint, their images must be separated by an angle approximating one minute, before they will be seen as separate stars. This principle was first enunciated by Robert Hooke, who used two black squares on a white ground; each square subtending the angle of one minute, and the two separated by a white space also subtending an angle of one minute. Just 236 years ago tonight, January 15, 1674, Hooke presented to the Royal Society of London a scale, each division of which subtended the angle of one minute, and demonstrated that no one present could distinguish the divisions when made to subtend a smaller angle.

The incomplete ring, the person tested being required to indicate in which direction it is incomplete, is an exact and extremely simple application of this principle. Its simplicity gives it peculiar value. It places on an equality people of all nations, literate and illiterate, and of different grades of mental development. It serves as a standard with which other figures may be compared. If the other figures are just recognizable at the same distance as the break in the ring, they can be used to test vision. The International committee has recommended certain forms of the Arabic numerals, 1, 4, 7, and 0, as conforming to this standard. But there seems to be no reason why many other figures and letters might not be standardized in the same way, and adapted to practical use.

The broken ring itself seems peculiarly adaptable to certain purposes of vision-testing: especially for use by teachers in testing the sight of pupils in the schools, and for testing the vision of employés in transportation services. The break can be turned up or down, to right or left, or half way between these positions. Theoretically it might be turned in ten wholly different directions. But practically the positions differing from each other by angles of 45 degrees are sufficient, and very easy to designate, either by words or by a gesture of the hand.

A series of these rings, arranged symmetrically on a square card, can be turned with either side up, so that practically it serves as four distinct test cards; and it can be so readily changed that the person tested has only once chance in four of guessing which arrangement of the rings is presented to him. A single broken ring printed at the center of a circular card can be turned in any desired direction, and the patient has but one chance in ten of guessing correctly. On account of this ready variability the danger of the person to be tested having learned the test is wholly eliminated.

A circular card two inches in diameter, with a broken ring on each side, furnishes an absolutely accurate scientific test for vision, that can be carried in the pocket and used anywhere at the bedside.

#### DISCUSSION.

Dr. Strickler considered this test a practical and simple one to ascertain the acuteness of vision.

Dr. Marbourg said that it would avoid the memorizing of the test letters, and would be of use in the detection of malingering, in connection with the red and green glass disks.

Dr. Neepor thought the incomplete ring was better than letters for testing the vision of railway and other corporation employés. When letters were used he advised having the patient pick out a designated letter, and then differentiate the distinctness of that letter, with the different lenses tried.

Dr. Coover believed the incomplete ring a good test for certain grades, but that it would consume much time.

Dr. Boyd thought the test an easy one for a child to understand.

Dr. Jackson would let the children get familiar with the card by seeing it often.

Dr. Magruder would use the reduced incomplete ring, at shorter range.

Dr. Friedmann thought the test proposed was most ingenious, simple, and of universal use; and especially commended the incomplete ring on a circular card.

Dr. Libby called attention to the difficulty of testing the sight of children between 6 and 8 or 9 years of age, with the test letters, because school children were now taught words rather than letters. He would find a welcome solution of this difficulty in the use of the incomplete ring, which he thought an improvement on the E-shaped figures of the test card for illiterates.

GEORGE F. LIBBY.

Secretary.

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### JOINT MEETING OF THE CHICAGO OPHTHALMOLOGICAL AND CHICAGO NEUROLOGICAL SOCIETIES.

#### Diagnosis Based on Eye Symptoms.

Dr. Henry Gradle opened a discussion on this subject. He stated that the eye is so commonly involved in a variety of nervous diseases that in most cases no definite conclusions can be based upon

this inconstant relationship. There are, however, some instances in which the eye findings, if carefully analyzed, and, especially when multiple, suggest with strong probability certain nervous diseases even if other manifestations are as yet not present. As illustrations he mentioned amongst others the following: One-sided pupillary contraction with mobility, narrowness of the lid aperture and increased vascularity in paresis of the cervical sympathetic. One-sided pupillary dilatation and immobility without other involvement of the third nerve in cerebral syphilis. Pupillary inequality in various psychoses. Bilateral pupillary rigidity, usually with myosis, in general paresis or tabes. Sudden paralysis of the accommodation with normal pupil in post-diphtheritic nerve disease. Bilateral optic neuritis especially in the form of choked disk is strongly but not absolutely indicative of a brain-tumor or other intracranial lesions with increased pressure, but only if not of self-limited duration. Bilateral neuritis without choked disk and of unequal intensity in the two eyes indicative of meningeal disease. One-sided neuritis is much more likely due to some infection or intoxication than to brain disease. Retrobulbar neuritis if double-sided and acute—less so if one-sided—suggests disseminated sclerosis, if chronic, intoxication by alcohol, tobacco or diabetes toxins. Retrobulbar neuritis may also be caused by nasal sinus disease. Double-sided progressive optic atrophy, especially with normal field of vision strongly suggestive of tabes; in cerebral syphilis the atrophy is more apt to be asymmetric in the two nerves. It is always asymmetric and rarely complete in disseminate sclerosis and apt to lead to irregular fields of scotomata. Tumors of the hypophysis must be diagnosed when bilateral atrophy occurs with hemianopic defects.

Dr. Hugh T. Patrick stated that some ophthalmologists would be rather surprised to learn how much some neurologists know about certain diseases of the eye. With regard to the Argyll-Robertson pupil, one thing, he said, is exceedingly interesting. While in Paris, Babinski showed him two patients who had this pupil. The test was a poor one. An ordinary wax taper was used for illumination, and a reaction to this test was considered positive. Both patients responded to the test, but on bandaging the eyes for half an hour, they responded very nicely to the same degree of illumination. Babinski had no explanation to make other than that it might be a retinal reaction.

Under the list of conditions in which one sees a dilated pupil which does not respond to light, Dr. Patrick included hysteria. He has seen two such cases and similar ones have been seen by others. He was rather inclined to question the statement that paralysis of accommodation is indubitable evidence of diphtheria, but he believes that it occurs in hysteria. It has been so recorded, and he has seen cases in point. Parinaud has described it as an isolated sign of hysteria.

In relation to choked disk, he stated that mention has been made of it now and again by some neurologists of the entity of such a condition. He has seen instances of it, characterized by typical optic neuritis, with moderate swelling, which disappears in time, leaving no trace behind it. It is not due to anemia or any disease of any sort. It occurs only at adolescence. The cases he saw in Berlin occurred in young people.

One thing, he said, which had not been mentioned in connection with optic neuritis is that the degree of swelling may be a very valuable indication as to whether a decompression operation shall be done. With a high degree of swelling and other evidences of brain tumor, it is not justifiable to wait for localizing signs or anything else. A decompression operation should be done at once, to save the patient's vision.

He has also been looking for optic neuritis in accessory sinus disease, but has never seen a case. In relation to optic atrophy, he was convinced that he had diagnosed cases of tabes with optic atrophy which he now believes to have been due to hypophyseal tumor. There are cases of tumor of the hypophysis in which there is optic atrophy, with almost loss of vision and of deep reflexes and of sexual power. Therefore, one should be exceedingly careful in making a diagnosis of tabes in such cases. He differed with Dr. Gradle with regard to the presence of defects in the visual field in cases of optic atrophy. He has seen cases showing such defects and he has seen two or three cases of optic atrophy in tabes in which there was imperfect homonymous hemianopsia. There was an irregular piece out of the field, fairly symmetrical in both eyes. In another case there was a re-entrant defect. In another case the corner was cut off from the field. These three defects occurred in cases of tabes with optic atrophy. He saw two cases, both women, in which he is convinced he should have made a diagnosis of hypophysis tumor, except that the visual defect was distinctly a central scotoma.

He has since learned that this also occurs in hypophysis tumor. The typical hemianopia of chiasm disease is not necessarily that of hypophysis disease. He saw a case recently in which there was a retrobulbar neuritis, caused by excessive use of alcohol, in which there was a central scotoma. The patient developed a beautiful multiple neuritis of the toxic type, and a diagnosis of tabes had been made, although it was not that.

Dr. Patrick endorsed what Dr. Gradle said about the Wernicke sign. Negatively, it is of little value. Positively, it is quite valuable. He is convinced that in some cases in which he did not find the Wernicke sign the lesion was behind the corpora quadrigemina. Where discovered, it was of assistance in localizing the lesion. He has seen two cases of bilateral lesion of the occipital lobe, one exceeding the other, and in neither case was the patient entirely blind. He believes that hemianopic defects of the visual field generally indicate disease in the occipital lobes. Vertical hemianopia, which is exceedingly rare, is practically always due to occipital disease, and if, with a more or less marked vertical hemianopia there is a lack of, or great interference with the sense of orientation, the lesion is probably in the rostrum of the corpus callosum. He has had one such case. The man could not see below, nor could he remember his way. After he passed his front gate, in a small village, where he knew every crook and turn and house, he was lost. In his own house, if he laid down on a couch, when he got up he could not find his way into the bedroom.

Another thing, is a sudden transient amaurosis, usually unilateral, possibly bilateral, which certainly is caused by multiple sclerosis, this blindness usually disappears in the course of a few days or weeks.

Scintillating scotoma may be due not only to migraine, but to occipital brain tumor of the hemianopic type.

Dr. N. M. Black exhibited some charts showing inversion or interlacing of the visual fields in increased intracranial tension and also in a case of brain tumor. The latter occurred in a boy, nine years of age, on whom a decompression operation was performed, with excellent results. His fields are now normal.

Dr. D'Orsay Hecht thought that probably greater refinement in diagnosis with reference to the eye will probably eliminate a field that has hitherto been rather obscure. He had an experience quite recently with a case of optic neuritis due to toxemia. The

patient gave every evidence of an incipient brain tumor, with a choked disc in one eye of the highest degree. The patient was nursing a five months' infant; her symptoms had existed for three months. There was also a transient glycosuria, which disappeared under treatment, as did also the optic neuritis, for which there was substituted the picture of a partial optic atrophy. He concluded, therefore, that this was not a case of brain tumor, but probably one of lactation optic neuritis. The particular point of interest in the case was whether it could be interpreted as a case in which the hypophysis was at fault, because it had been suggested that during pregnancy the hypophysis becomes hypertrophied, giving rise to the symptoms mentioned. He was inclined to believe that this was not a case of lactation toxemia, but one of derangement of hypophysis-function.

Dr. Julius Grinker has seen a number of cases of multiple sclerosis, but has failed to find one case that showed optic neuritis. He has seen a number of cases with optic atrophy. This observation has been confirmed by others, that optic atrophy is common, while optic neuritis is rare. In hypophysis tumor there is occasionally a loss of the reflexes, and where the optic atrophy is complete, not merely bitemporal hemianopsia, with loss of reflexes, the diagnosis of tabes is apt to be made. In a case seen about two or three years ago, while examining the patient, he felt certain that it was a case of tabes, but before he completed the examination he changed the diagnosis to tumor of the hypophysis.

With reference to scintillating scotoma, when it is present, one should think of migraine as well as of occipital tumor. In one case under his observation, a neurologist was led to think seriously of brain tumor, specific in nature, and the patient was put through a course of antispasmodic treatment. The treatment proved ineffective. The history of headaches following the scintillating scotoma, with headaches on the opposite side, led Dr. Grinker to make a diagnosis of migraine, which has since been proved to be correct.

Dr. Sydney Kuh asked Gradle about the significance of an irregular outline of the pupil in an eye which is not the seat of any local disease. When this symptom was first described, it was thought to be absolutely pathognomonic of syphilis. That view has since been refuted, and the symptom is now considered to be merely suspicious of syphilis, a belief in which Dr. Kuh concurs.

Dr. E. V. L. Brown called attention to an article which ap-

peared in a French journal, describing a case in which there was a scotiform atrophy of the pupil in tabes.

Dr. Peter Bassoe, in the case of a young girl who during her lifetime had had hysteria with optic neuritis, congenital optic atrophy and marked visual defect, found at the post-mortem a huge lesion in the optic chiasm, which cut off all the medullary fibers in the beginning of the optic nerve. That, he thought, was one case of multiple sclerosis in which the first ophthalmoscopic finding was an optic neuritis.

Dr. Hugh T. Patrick referred to a recent paper by Dr. Harvey Cushing, in which he reported cases of tumors in various locations, but not involving the visual tract especially. In some of these cases the interlacing of the fields was present when there was little or no optic neuritis. Sachs examined five cases of brain tumor, in which he found interlacing of the fields present either in all or in four of the cases. Bordelais really did this work first and is deserving of all credit.

Dr. Gradle (closing) emphasized that it is essential for neurologists to use the proper method of pupillary examination and that any existing pupillary defect is not due to any condition in the eye, or to any error in refraction. If the patient does not face the source of light directly, but is at an angle to it, the less illuminated pupil will sometimes appear a little larger than the directly illuminated pupil. It is best to examine pupils first in daylight, to which the patient is accustomed, and then by means of artificial light. The best way is to have an Argand burner in a fairly dark room, turning it down completely. Watch the pupil in dim light, then suddenly turn on the full glare of light, preferably with a condenser. In that way one is almost sure to get a reaction. It is well known that the retina becomes more sensitive after being excluded from daylight for a while.

The object of his paper, he said, was not to state that there are many eye symptoms in nervous diseases, but to emphasize particularly that certain eye symptoms are strictly indicative of certain nervous diseases. Thus, in tabes, if the visual defect is irregular field of vision, one cannot make a diagnosis of tabes, but must say, "Not proven." If there is a progressive atrophy, nearly symmetrical, in both eyes, without constriction of the visual field, one can say with certainty that it is a case of incipient tabes, even if there are no other symptoms present, and all reflexes are positive.

As to optic neuritis in sclerosis, he called attention to the writings of Uthoff, in the Graefe—Saemisch Handbunch of Ophthalmology, not yet completed. Uthoff gathered statistics as to the frequency of certain eye symptoms in certain nervous diseases. He found that in sclerosis, eye symptoms are present in more than half the cases, but the probability is that if the case were followed from beginning to end, eye defects would be found to occur, at one time or another, in more than fifty per cent of the cases. Optic neuritis is one of the rarer indications of sclerosis. It occurs in about five per cent of the cases, while retrobulbar neuritis, not visible with the ophthalmoscope, is more common, and quite common, too, is partial optic atrophy.

Amblyopia and amaurosis in diffuse sclerosis might be mistaken for hysteria, when the intracranial portion of one optic nerve is involved by a sclerotic patch. As earlier sclerotic foci are not necessarily permanent, very marked recoveries are seen in such cases.

Regarding the irregularity of the pupil, due to partial paresis, he said, it has been observed in other instances besides syphilis; certainly in tabes, although here it might be a question whether it is postsyphilitic. It has been observed in various cases of Argyll-Robertson pupil.

### **Migraine.**

Dr. Sydney Kuh read a paper on this subject. He called attention to the necessity of distinguishing between idiopathic and symptomatic migraine, of which only the former was to be considered in this paper. The disease usually begins early in life, before the twentieth year. Heredity is by far the most important etiological factor. Gout may be considered of no importance, eye-strain as merely an exciting cause in rare instances. Amongst other exciting causes attention was called to the peculiar influence of very profound and unusually long sleep. A brief description of the prodromal stage and aura was followed by an enumeration of the symptoms of the attack proper. He reported a brief attack of complete motor aphasia in one of his cases, an unusual abdominal sensation observed in himself during the attack, which he was inclined to attribute to an absence of normal peristaltic movements of the bowels, referred to the hypothermia seen by several authors and the lymphocytosis reported by Russow. Mental disturbances are rare phenomena. Occasionally a severe inter-current disease seemed to



deteriorate the attacks of hemicrania, as does sometimes the menopause.

The disease usually lasts the greater part of the life, rarely produces really grave results. Treatment often brings amelioration. A case was mentioned in which migraine was associated with exophthalmic goitre and in which with the subsiding of the symptoms of the latter the attacks of the former ceased. Several hygienic and dietary measures were discussed. The bromides had been disappointing in the hands of the author, the salicylates and coal-tar anodynes proved to be most valuable in many cases. The beneficial influence of mental exertion during the milder attacks was emphasized.

The pathogenesis of the disease is unknown. Many strong arguments can be advanced in favor of the theory that an auto-intoxication is responsible for the symptoms. The author does not believe that migraine is a manifestation of epilepsy.

Dr. Frank Brawley disagreed that ophthalmologists in general entertained the belief that eye-strain is a cause of migraine. Dr. Casey Wood collected the opinions of the majority of ophthalmologists in this country, and his findings show that the general opinion is that five per cent of cases were cured by proper correction of refractive errors, fifteen per cent were relieved, and a few men claimed that ninety to ninety-five per cent of cases could be cured by treatment of the eye. Personally, he has never seen a case that was cured by any local treatment of the eye. He has seen cases where relief was afforded, the number of attacks being lessened, but not a complete cure. Fuchs, he said, considers migraine an angioneurosis, somewhat similar to fainting. It is odd, however, that the vasomotor disturbance occurs practically always in the same areas of the brain; of course, each case varies to a certain extent during each attack.

Gowers believes that the condition is caused by a morbid state of the nerve cells. Therefore, vomiting gives relief, the vomiting being a nervous discharge. The common belief regarding the effect of eye-strain as a cause of migraine, he thought, was undoubtedly the result of the publications of some of the more enthusiastic neurologists.

Dr. Harold N. Moyer stated that he had never cured a case of migraine, although he has helped many patients. By means of proper hygienic measures, patients have had their attacks mitigated.

but a cure has never been effected. Eyestrain, he said, does not play any part in the production of migraine, and yet some ophthalmologists claim that they cure migraine by fitting glasses. He has not seen one case that it even helped. He has had patients with well-defined eye-strain headaches associated and complicated with migraine. With proper refraction these patients have been relieved of their eye-strain headaches, but they have their migraine headaches at regular intervals.

Dr. George F. Suker, who is a sufferer from migraine, gets much relief from a good strong cigar or several of them. It is the only thing that will give him any relief. As to refraction curing migraine, he does not believe that a true migrainous patient has ever been cured or even relieved by the correction of a refraction error. He has tried everything in his own case, but without avail.

He has observed that the disease is transmissible. It was transmitted to him by his mother, and to her by her father. He has frequently noted that the disease is transmitted from father to daughter and from mother to son. He regards the symptoms as of toxic origin. The scintillating scotomas, the hemianopia and the twitching of the lids, seemed to be an involvement of the third, fifth and seventh nerves, of the toxic variety, with unilateral tendencies. The reading of a book or some task that will cause the sufferer to forget himself will usually give some relief.

Dr. William H. Wilder recalled the time when the view was held and maintained by medical men generally that refractive errors were the cause of migraine, and that the relief of such errors would cure the migraine. It has been his observation that migraine can very rarely be relieved by the correction of any error of refraction, even in the more severe cases, where there are distinct ophthalmic symptoms. The ophthalmologist, he thought, frequently sees a type of this disease which is very much less pronounced than the classic picture presented by Dr. Kuh. The great majority of the cases of migraine are cases of migrainous headaches. Some of the symptoms are pronounced, others are not. These cases can be benefited. If refractive errors exist, they must be corrected, and he knows positively that he has benefited some cases of migraine. Where the astigmatism is oblique, it is difficult for the muscles to adjust themselves, but these cases are few and far between. The opinion of men most careful in their observations will be that a very limited number of these cases will be benefited by treatment. In many cases of

migrainous headache, muscular imbalance plays a very limited role. It will often disappear. He believes that there are cases of migraine where, when an astigmatism of considerable degree was relieved, the attacks became less frequent and less severe.

Dr. Gradle wanted to emphasize that according to his experience there are instances of periodic headaches indistinguishable from migraine which are permanently relieved by the use of glasses. It is a severe headache which occurs in periodic attacks sometimes preceded by scotoma and sometimes complicated by nausea. Gradle has records of many cases of this kind observed for years who remained free from attacks while they wore glasses. The refractive condition found was mostly a medium degree of astigmatism, relatively often against the rule or with oblique axis. The most striking instances were those in which the migraine-like attacks were limited to the side of the more astigmatic eye or the one with the most deviated axis. Migraine dependent on simple hyperopia has also been observed, although relatively infrequent. Gradle got the impression that the migraine influenced by glasses did not date back as commonly to childhood, and on the other hand was more often intensified by any malnutrition than the headache which was not related to the eyes. Possibly there may be in the case of migraine, as there is in the case of epilepsy, a distinction between the idiopathic disease (of central origin) and a reflex affection clinically similar, but starting from the eye or, as it may happen, the nose or some other organ.

On analyzing his records of a hundred cases of periodic headaches, under observation for some time, Gradle found about one-fifth permanently relieved by glasses, about one-third more or less benefited, though sometimes only temporarily, while the rest were either not influenced at all by the optic correction or had normal eyes. His records show many instances in which glasses relieved the constant or irregular headaches due to eye-strain, but did not influence typical migraine attacks in the same patients. He would freely admit that the percentage of migraine cured by glasses (about 20 per cent) is not nearly as large in the average observation of the disease as it was in his selected cases. In the treatment of migraine not dependent on the eyes he has been able to relieve materially and sometimes cure about a quarter to one-third of his patients by the use of *cannabis indica*. Comparative trials have shown him that there is no preparation on the market with which he could obtain

the results as positively as with Herring's extract. He uses from one-sixth to one-quarter of a grain of Herring's solid extract dissolved in alcohol. This will often check the attacks as well as help to render them less frequent.

Dr. Patrick saw a medical student with a visual trouble which was always uniform. It began with a gradual loss of the right field of the right eye. The obscuration traveled across toward the left eye until the right eye was totally blind. Vision in the left eye was good. Then the left eye was attacked in exactly the same way, proceeding from the nasal periphery until he had lost the right field in the left eye; the right eye being completely blind. The blindness traveled across until he was blind in both eyes. Vision returned in exactly the same way. In about twenty minutes he was all right. Then he had his headache. No circulatory disturbance farther back than the retina would account for that.

As to *cannabis indica*, he has given hundreds of quarts of the fluid extract. Some persons are not helped by it, some are helped a little, and others materially, so that the attacks are reduced in frequency, in severity and in duration. As to the administration of the drug, the variation of personal susceptibility is greater than the variation in preparation. Some preparations are absolutely innocuous. A physiologic or a toxic effect may be obtained with from four to eighty drops, but there is no way of telling beforehand what will happen. He has given five grains of the powdered extract three times a day.

Dr. Grinker found *cannabis indica* to do very little good in many cases, although some patients consider themselves cured. It certainly is worth trying. The quality of the preparation is important. A manufacturer will put up a good preparation of one kind, and then a poor one at another time. He starts with two drops, working up gradually to the dose that will produce poison. Then he falls back to two drops. He does that in every case, and every time a new bottle is opened.

As to the relationship between epilepsy and migraine, he believes that such a relationship exists, although he does not know what it is. He has seen migraine alternating with epilepsy, and in one instance a good illustration was presented of how a migrainous mother may transmit epilepsy to her child. The occurrence of attacks of migraine after a severe psychic outburst, he thought, puts migraine on a level with epilepsy.

Dr. Hecht has prescribed cannabis indica extensively in migraine, giving as high as ninety drops every four hours. He has also given the powdered extract referred to by Dr. Patrick. He has used cannabis Americana, and has found it to be fully as potential as cannabis indica, with less of its toxic effects.

In the last four months Dr. Schueler, an expert radiographer in Berlin, exploited a new theory of migraine, with a surgical aspect. He concludes that there is a disproportion between the brain and skull in these cases; that the former is too large for the latter. He advises lumbar puncture or brain puncture. He discovered a certain fissuring on the inner aspect of the skull, showing that the intracranial tension was great. This cannot be explained on any basis other than the existence of an internal hydrocephalus.

Dr. Frank Allport suggested that many of the discrepancies in the literature are due to incorrect diagnoses. Migraine is a term that is used indiscriminately, and wrong diagnoses are made on that basis. Many observers call any kind of a headache migraine, and then claim that they can produce a cure by fitting glasses.

Dr. Kuh (closing) believed that some cases of migraine are relieved by the proper fitting of glasses, and that a large number of these cases in which such wonderful cures are obtained from the fitting of glasses are really cases of hysteria. To say that migraine is an angioneurosis does not bring one any nearer to a solution of the trouble. There is a certain amount of circulatory disturbance in migraine, but what is it?

Dr. Suker's experience he regarded as interesting, because when he wants to be sure of getting an attack of migraine, he smokes a strong cigar, showing that the patient and not the disease must be treated. The milder, more incomplete forms of migraine are in the majority. He has found cannabis indica to be most valuable. Personally, he invariably is relieved or at least succeeds in aborting an attack by taking one-fourth grain of calomel at the very onset.

As to the relationship between migraine and epilepsy, both are neuroses occurring in neuropathic families. They are very common, and therefore there is nothing remarkable in the fact that epilepsy and migraine occur in the same individual or family, just like epilepsy and hysteria. It is false to claim a more intimate relationship between these two diseases, beyond the fact that they are the result of the same neuropathic tendency. WILLIS O. NANCE,

Secretary.

## Notes and News.

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Dr. John F. Rowland, eye, ear, nose and throat specialist, of Hot Springs, Ark., was elected, on the 5th of April, vice-president of Garland County Hot Springs Medical Society.

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Prof. Theodore Leber celebrated his seventieth birthday at Heidelberg, February 28th.

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Dr. DeWitt C. Bryant of Omaha, has been re-elected president of the Physicians' Casualty Association of that city.

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Dr. Joseph B. Greene of Birmingham, Ala., has removed to Asheville, N. C., where he will resume his special practice.

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Drs. S. F. Nabers and Kosciusko W. Constantine have been appointed as eye surgeons on the staff of the Hillman Hospital, Birmingham, Ala., to serve from April 1st to October 1st.

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Dr. W. J. Means of Columbus, Ohio, discussed "Practical Examinations," at the conference of the Council of Medical Education of the American Medical Association, held in Chicago, February 28th.

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The Hill Crest Surgical Hospital which was recently opened in Minneapolis is a private hospital intended to give special service in the various departments of surgery, including the eye.

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Dr. A. R. Baker of Cleveland, presented an address on "The Teaching of Ophthalmoscopy" at the twentieth annual session of the Association of American Colleges held in Baltimore, March 21st and 22nd.

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Dr. Joseph White, as chairman of the committee of arrangements, presided at the twelfth annual meeting of the Tri-State Medical Association of the Carolinas and Virginia, held in Richmond, Va., February 15th, 1910.

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The Third International Congress on School Hygiene is to be held in Paris, August 2nd to 7th. The work of the congress is divided into eleven sections, one of which includes the hygiene of the eye, ear, nose and throat.

Dr. Henry Glover Langworthy of Dubuque, Iowa, in the *Journal of the A. M. A.*, March 12th, 1910, advocates the publication, by every county medical society with a membership of forty-five or more, of a quarterly or monthly bulletin.

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Dr. F. C. Todd of Minneapolis, who was a member of a sub-committee of ten on diseases of the eye, ear, nose and throat, of the Council on Medical Education, reported that the committee decided unanimously that refraction work should not be taught because they were educating men to become general practitioners.

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A life-sized statue of Prof. Jaeger von Jaxthal was erected recently in the hall of the University of Vienna. Prof. Fuchs delivered the address. Prof. Jaeger died in 1884 after enjoying eighteen years as the foremost European eye surgeon. He was the son of a famous ophthalmologist and a grandson of another famous eye surgeon, Beer. One of Jaeger's best known works is his "Atlas on the Fundus Oculi."

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A death has been reported in Great Britain under Jonnesco's method of spinal anaesthesia. The case was an unfavorable one. A man, aged sixty, with valvular heart disease was operated on for strangulated hernia and  $1\frac{1}{2}$  grains of stovain dissolved in 17 minims of a strychnia solution containing  $1\frac{1}{65}$  of a grain was injected to induce spinal anaesthesia. The patient did not lose consciousness, but died following the operation, death being attributed to heart disease aggravated by operative shock.

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The committee appointed at the meeting of the Ophthalmic Section of the A. M. A. at Atlantic City last year to study, investigate and report on the Smith operation, and its adaptability to conditions as found in America, is sending out a circular letter to all the members of the section known to have had experience with the operation. The report is to be classified under different headings to show the condition of the eye before operation; the operation itself; the immediate and remote result.

The committee respectfully requests any member of the section who is interested in the operation and has not received a circular letter to write the secretary, Dr. W. R. Parker, Chamber of Commerce building, Detroit, Mich., or Dr. D. W. Greene, chairman, 19 Perry street, Dayton, Ohio.

*Egyptian Ophthalmological Society.*

The papers of the *Société d'ophtalmologie d'Egypte* are given in French, the discussions also being generally held in that language. One meeting a year, preceded by a banquet, is held at which a program is presented mostly made up of contributions relative to *non-trachomatous* eye diseases. That category of ophthalmic affections is always taken for granted. Inasmuch as 95 per cent of the native population suffer from trachoma in some form it inevitably follows that whatever else a given patient may offer, his eyes exhibit some stage of complication of the disease, which may or may not be mentioned in the course of the paper or the subsequent discussion. In that respect it is like remarks about the weather in upper Egypt; it is only the new arrival that discusses it because it is always the same.

*En passant*, the question of the evolutionary effect produced in the native conjunctiva and cornea by 5,000 (or more) years of universal trachoma, is one worth considering. A number of well-known Egyptian ophthalmologists believe that the tissues of these organs are not only to a large degree immune to the serious sequels of the disease, but that the other infections which in Egypt are extremely common (gonococcal invasions especially), are less pronounced than in European and American countries because of these normal changes in these tissues or through variations in their innervation.

At the annual meeting of the society held March 5, 1910, at the Automobile Club in Cairo, the following papers were read:

By Dr. Max Meyerhof:

(1) An Account of the Most Ancient Arabian Manuscripts on Ophthalmology. Recently Discovered in a Private Cairene Library.

(2) Microphotographs of the Prowabek-Greeff Corpuseles.

(3) Plexiform Angiofibroma of the Lids. This last paper with a number of illustrations, will shortly appear in the OPTHALMIC RECORD.

By Dr. Nasr-Faride:

(1) A Case of Blepharoplasty. With Presentation of the Patient.

(2) Purulent Ophthalmia in Egypt.

By Dr. H. Peretz:



(1) A Case of *Conjunctivitis Petrificans*.

(2) On Spasmodic Entropion and its Treatment.

By Dr. Cassimatis:

On the Employment of Silver Nitrate in Ocular Therapeutics.

By Dr. Aly Bey Heydar:

Profuse Hemorrhage Following Scarification of the Conjunctiva.

By Dr. Sameh Bey:

(1) Statistics of the Clinic at Helowan for the Years 1908-1909.

(2) Corneal Symblepharon.

(3) Evulsion of the Iris in Absolute Glaucoma.

By Dr. Massé:

(1) Glaucoma and Sclerecto-Iridectomy.

(2) Chronic Dacryocystitis and Ozena.

By Dr. Demetriades:

A Case of Ocular Dermoid.

By Dr. Jacovides:

(1) Contribution to the Study of Trachoma Corpuseles.

(2) Serious Injury to the Cornea Following the Use of a Thirty Per Cent Solution of Silver Nitrate: With Presentation of Patient.

The address of the secretary is Dr. G. S. Jacovides, 1 rue El Falaki, Alexandria, Egypt.

Dr. Casey Wood of Chicago, who has been spending the winter in Egypt, and from whom the above communication was received, returned April 24, 1910.

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### BOOK NOTICES.

Four Common Surgical Operations in India. By Major P. C. Gabbett, I. M. S. With Notes on Cataract Extraction by Major R. H. Elliot, M. D., I. M. S., Superintendent Ophthalmic Hospital, Madras. Higginbotham & Co., 1910.

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The Propaganda for Reform in Proprietary Medicines. Sixth edition. Containing the various exposes of nostrums and quackery which have appeared in The Journal of the American Medical Association. Price, paper, 10 cents; cloth, 35 cents. Pp. 292. Illustrated.

# CHICAGO EYE CLINICS.

## NOTES AND NEWS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.-G.) J. F. Burkholder (E. E. N. T.)	G. W. Mahoney (Poli.) *Geo. F. Suker (P.-G.) Oliver Tydings (E. E. N. T.) C. H. Francis (Poli.)	E. J. Brown (E. E. N. T.)	G. W. Mahoney (Poli.) Richard S. Pattillo (P.-G.) J. F. Burkholder (E. E. N. T.)	Richard S. Pattillo (P.-G.) Oliver Tydings (E. E. N. T.)	G. W. Mahoney (Poli.) E. J. Brown (E. E. N. T.) C. H. Francis (Poli.)
10 A.M.	L. J. Hughes (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	E. J. Brown (E. E. N. T.)	L. J. Hughes (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)
	Brown Tusey, N.W.U. Every day, 10-12 A.M.					
11 A.M.	H. W. Woodruff (E. E. N. T.)	A. G. Wipern (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	A. G. Wipern (E. E. N. T.)	H. W. Woodruff (E. E. N. T.)	A. G. Wipern (E. E. N. T.)
1 P.M.		Willis O. Nance (C.C.S.)		Willis O. Nance (C.C.S.)		Willis O. Nance (C.C.S.)
2 P.M.	E. V. L. Brown (Inf.) E. J. Gardner (E. E. N. T.) M. H. Lebensohn (Inf.) Wm. E. Gamble (Inf.) D. C. Orcutt (Inf.) D. A. Payne (Ills. Med.) N. E. Remmen (Inf.) F. A. Phillips (Inf.) Wm. H. Wilder (Inf.) Emily Selby (Inf.) Wm. H. Woodruff (Inf.) H. W. Young (Inf.) N. A. Young (P. & S.) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) *Oscar Dodd (Inf.) M. H. Worthington (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) Thos. Faith (E. E. N. T.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) D. C. Orcutt (Inf.) D. A. Payne (Ills. Med.) N. E. Remmen (Inf.) F. A. Phillips (Inf.) Wm. H. Wilder (Inf.) Emily Selby (Inf.) Wm. H. Woodruff (Inf.) H. W. Young (Inf.) N. A. Young (P. & S.) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) *Oscar Dodd (Inf.) M. H. Worthington (Inf.)	E. V. L. Brown (Inf.) W. Allen Barr (Inf.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) Wm. H. Wilder (Rush) H. W. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) *Oscar Dodd (Inf.) M. H. Worthington (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) Wm. H. Wilder (Rush) H. W. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) *Oscar Dodd (Inf.) M. H. Worthington (Inf.)	E. V. L. Brown (Inf.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) Wm. H. Wilder (Rush) H. W. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) *Oscar Dodd (Inf.) M. H. Worthington (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) Wm. A. Fisher (E. E. N. T.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) D. A. Payne (Ills. Med.) F. A. Phillips (Inf.) *Wm. H. Wilder (Inf.) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)
3 P.M.	W. Allen Barr (C.C.S.) *Wm. E. Gamble (P. & S.)	H. H. Brown (Ills. Med.)	*J. F. Harner (P. & S.) W. Allen Barr (C.C.S.) *Wm. E. Gamble (P. & S.)		W. Allen Barr (C.C.S.)	Geo. F. Suker (P.-G.)
4 P.M.	W. F. Coleman (P.-G.)	C. W. Hawley (P.-G.)	G. F. Suker (P.-G.)	C. W. Hawley (P.-G.)	W. F. Coleman (P.-G.) Brown Pusey (County)	

\*Special operative eye clinics.

### ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 816 E. Harrison Street.	County: Cook County Hospital, W. Harrison and Honore Streets.	Poli.: Chicago Policlinic and Hospi- tal, 174 E. Chicago Avenue.	Rush: Rush Medical College, W. Harrison and Wood Streets.
E. N. T.: Chicago Eye, Ear, Nose and Throat College, Washington Franklin Streets. Clinics all day.	Ills. Med.: Illinois Medical College, 182 Washington River.	P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.	St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.
	Inf.: Illinois Charitable Eye and Ear Infirmary, Florida and Adams Streets.	N. W. U.: Northwestern University, 2431 Dearborn Street.	

# THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS  
OF OPHTHALMOLOGY

VOL. XX

CHICAGO, JUNE, 1910

NO. 6, NEW SERIES

## PLEXIFORM ANGIOFIBROMA OF THE EYELIDS.\*

BY DR. MAX MEYERHOFF,

CAIRO, EGYPT.

(Illustrated.)

(Translated by Casey A. Wood.)

Those local, vascular neoplasms, known as angiomata, have their site of predilection in the tissues of the head. They constitute rather rare tumors of the eyelids, although the lymphangioma, especially the fibromatous form of it (elephantiasis, for example), is not uncommon.

The writer has already published\* a case (which he operated on in Germany) of lymphangioma of the lids, conjunctivæ and orbit. The case that forms the subject of this paper resembled it externally, but differed from it in its pathological anatomy.



Fig. 1.

Katarina P., born on the Island of Mytilene and aged 16, consulted the writer in July, 1909. She had every appearance of a

\*Read at the Annual Session of the Société d' Ophtalmologie d' Egypte, March 5th, 1910.

\*Klin. Monatsbl. f. Augenheilk., 1902.

perfectly strong and healthy girl. Six years before, a bluish spot was noticed on the upper left lid. This spread until, three years ago, it had grown into a tumor that entirely covered the left eye, excluding the vision, and so disfiguring the young girl that she desired to have it removed.

Two attempts to extirpate the new growth were made with the actual canterry, but without success.

In its present condition the bluish tumor is a great disfigurement, as it entirely covers the left eye, forming an irregular, lobular mass. It involves the whole of the left upper lid and has invaded the tissues about the external angle as well as the temporal portion of the lower lid. See Fig. 1. In the upper lid the mass measures 2x4 cm., while its thickness is about 1.5 cm. Its consistence is very soft: pressure between two fingers is painless, but reduces the size of the tumor somewhat.

The inferior portion of the neoplasm, affecting the cheek and lower lid, measures 3x2.5 cm. and is not compressible. A scar, due to a previous cauterization, shows on its surface. The eyeball is normal, vision being in each eye 5/7.5, with —4 D. There is a slight mucous discharge from the conjunctiva. Diagnosis: Cavernous angiofibroma.

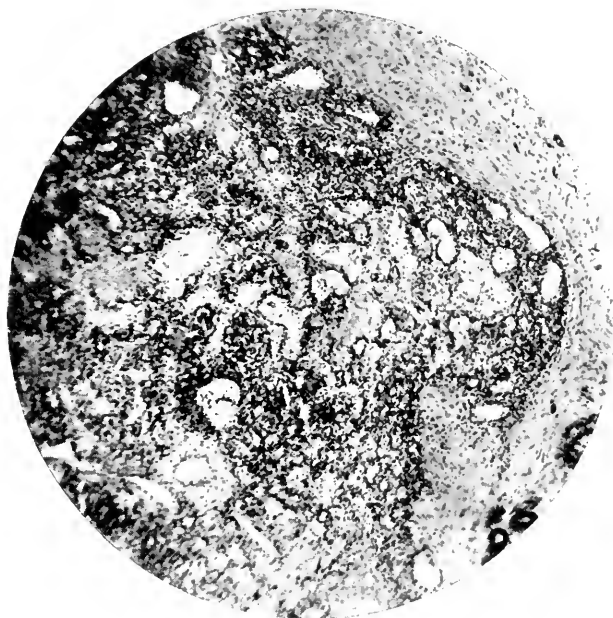
On July 13, 1909, most of the tumor mass was excised under chloroform. There was less hemorrhage than might have been expected under the circumstances and the wound of operation healed by first intention after a delay of seven days. Two secondary



Fig. 2.

excisions, under local anesthesia (for the extirpation of a small remaining portion of the tumor) were made July 31, as well as the electrolysis, a week later, of a superficial vein in the cheek. After this last intervention the cosmetic effect was quite satisfactory, even better than is shown in the photograph (Fig. 2), taken immediately after the operations. The visual acuity remained the same as before the excision of the tumor and it is of interest to note that binocular vision, interrupted for at least three years, was entirely re-established as soon as the left eye was uncovered.

The microphotograph (Fig. 3), as well as the microscopical tions, have been made by Dr. Dreyer, bacteriologist to the Egyptian government. They present the characteristic appearances of a sub-



cutaneous fibroma containing numerous veins (especially venocavernous plexuses) distributed rather regularly throughout the tumor mass. In other words, we have to deal with a *plexiform angiofibroma*.

In the absence of a history of traumatism or other recognized

etiological factor, one is constrained to regard this growth as congenital. So far as prognosis is concerned, statistics prove that the radical extirpation of angiofibromas is rarely or never followed by relapse. The cosmetic result of the operation depends, of course, upon the extent to which the lid muscles (which should always be protected as far as possible) are involved in operative procedures undertaken for the removal of the growth.

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## RING ABSCESS OF THE CORNEA.\*

### (Peripheral Annular Infiltration.)

BY JAMES ALLEN PATTERSON, M. D.

COLORADO SPRINGS, COLO.

The first literature upon this subject appears to have been from Fuchs (Graefe's Archives, Vol. LVI). I quoted from the Ophthalmic Year Book, 1901: "Who under this name describes a disease of the characteristics to be mentioned which 'goes on rapidly to softening of the cornea and panophthalmitis.' Fuchs reported nine cases, of which three had suffered recent wounds of the center of the cornea, two near the corneal margin, three were cases of recent cataract extraction, and one case of old injury as evidenced by an adherent leucoma.

"Fuchs found no particular bacterial form common to many or all of his cases."

Hanke isolated a hitherto undescribed bacillus from one of his cases which he claimed to be pathogenic. The next year Morax in discussing this disease disagreed with Hanke's findings. Morax believes this condition may be communicated by various infections "of both *exogenous* and *endogenous* origin."

The reader is referred to Ophthalmic Year Books for 1904, 1905, 1906, from which I have freely quoted.

This characteristic affection is of such a rarity as to warrant my reporting a case that can be described best by Parson's (Path of the Eye, Vol. 1), who says that "The ring is at first gray, then yellow, 1.5 mm. broad, with a peripheral edge 4-4.5 mm. from the limbus." The ring in my case looked exactly like an arcus senilis, though wider, the color at first gray; until I stained the cornea I was not sure of the diagnosis as the surface then appeared smooth.

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\*Read before the Colorado Ophthalmological Society, March 19, 1910.

This ring "consists of two zones, (1) Amongst the middle and superficial lamilla, (2) immediately in front of Descemet's membrane. The anterior infiltration ring is always most marked. At the periphery of the ring the infiltration is greatest in the middle layers, the superficial layers being more affected as the center of the cornea is approached, later the infiltration is so intense in the superficial layers that necrosis occurs. The posterior infiltration ring is less constant. Most of the cells lie directly upon Descemet's membrane, which is thus separated from the cornea." In my case the secondary ring was not seen after the second day until recently, owing to the general infiltration of the superficial layers clouding everything below it excepting the vague outline of the pupil.

Parsons, continuing, says that "Bacteria were present in large numbers in the anterior chamber and often in the vitreous, staphylococci and streptococci were each found twice, bacilli three times, twice in pure culture, once mixed with cocci." It is impossible from the text to learn whether these bacteriological findings are those of Parsons, of Fuch's original cases or of the four cases all following trauma which he quotes from Treacher Collins, *Ophthalmic Review*, XII.

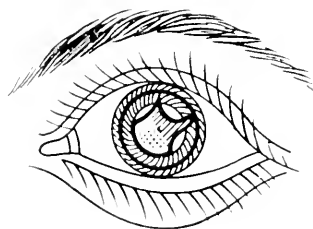
The case that I report, while absolutely characteristic in appearances, was not caused by any known trauma and the bacteriological findings rather support than controvert Fuchs and as far as one case can do confirm Morax's opinion against Hanke's assumption of a specific bacillus. Whether the treatment by vaccine therapy instituted in this case prevented the threatened panophthalmitis from being established, is open for discussion.

G. L., act 40, locomotive hostler, was seen on January 17, 1910, giving a history that three weeks previously during his convalescence from pneumonia, coincident with a crop of herpes febriles upon the upper lip, left side, there was noticed three blebs of the same eruption upon the lower lid of the left eye and this eye became inflamed with chemosis of the conjunctivae. His family physician used insufflations of calomel and a wash of sulphate of zinc. Under these ministrations the redness of the eye improved. On January 15, he began having intense pain in this eye accompanied by lachrymation, photophobia and smarting. The pain became so intense that two days later I was called, the eye then being in an active stage of irido-cyclitis; this pain subsided with unusual

promptness under atropin, dionin, and hot applications. On the 20th he was able to come to my office when the ring abscess described was first noticed. The pupil was slightly contracted, the anterior chamber deep, the aqueous turbid with the characteristic spots upon Descemet's membrane as well as a small hypopyon. On January 22, after the eye had been thoroughly anaesthetized it was found that every particle of corneal epithelium had degenerated so that those parts that did not stain consisted of a thin pellicle under which a probe could easily be inserted and the membrane lifted up "en masse." Some of it was snipped off with scissors and 50 per cent nitric acid applied. On this date it was noted that the ring ceased to stain.

On the 24th and 25th the stained portion of the cornea took the form of a crescent which did not involve the ring, the nasal edge staining to within 1 mm. of it; this crescent became smaller daily until on the 29th, when only a minute spot stained at the lowermost point of the original crescent, and on the 30th nothing stained, but the entire center of the cornea was hazy, the outline of the ring being quite noticeable. From the start continuous efforts were made by a twice daily round of various mydriatics to obtain full dilatation of the pupil though most of the time it was a struggle to maintain what dilatation was obtainable after these heroic efforts, this dilatation was, however, more easily maintained by the 30th.

On January 31, at 6 p. m., the eye again began paining, but became quiet by February 5, and on that date the epithelium



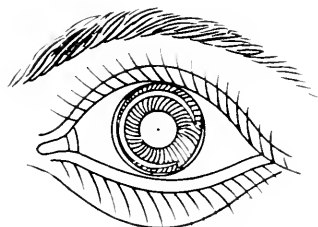
NO 1

again peeled away from the cornea leaving a portion that stained exactly as it had done on January 22. Sketch No. 1.

The edges were undermined and one edge was snipped off and



cultured by Dr. P. A. Loomis, who found staphylococci aureus. On February 6, 100,000,000 staphylococcus aureus stock vaccine was administered. February 8, given 100,000,000 of the same vaccine. February 9, at 4 a. m., he had lachrymation, some discomfort with sensation of something sticking into the eye. When he came to my office there was found a pinkish hue involving the entire anterior chamber, no details of iris or pupil discernible. Eye soft. The appearances gave the suspicion of there having been a hemorrhage into the anterior chamber. February 11, perception of light only. Two hundred million staphylococci vaccine administered. February 18, anterior chamber clearing, 200,000,000 vaccine given. February 23, 200,000,000 vaccine given. The anterior chamber exudation gradually cleared so that on February 27 the outlines of the pupil could be discerned. From this time on recovery has been uninterrupted and very rapid, anterior chamber has cleared, corneal epithelium restored, great increase in visual acuity but a distinct corneal haze, showing somewhat the lines of the original shape is quite evident and seems the prominent factor in preventing good vision. He counts now fingers and discerns the outline of his finger nails.



Nº 2

Since the corneal haze has cleared the superficial ring is visible excepting at the nasal edge of the cornea where it is probably covered by the epithelial haze; the secondary ring is visible in the segment in which the superficial ring is lost and also as a semi-circle corresponding to the nasal half of the cornea. This ring is so far toward the periphery as to be almost under the limbus. See sketch.

**A BRIEF HISTORIC SKETCH OF JACQUES DAVIEL  
AND HIS WORK, SUGGESTED BY A VISIT  
TO HIS GRAVE.**

BY D. W. GREENE, A.M. M.D.

DAYTON, OHIO.

(Illustrated)

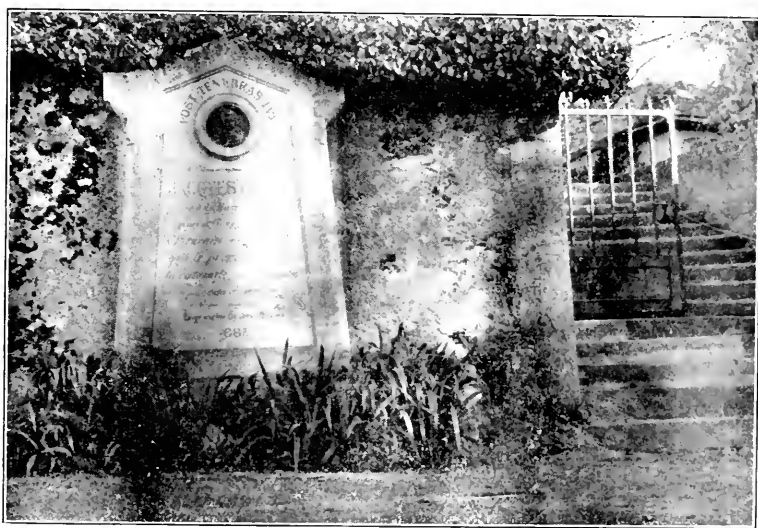
On my way from the International Medical Congress at Buda Pesth to Marseilles last September to take the "Egypt" of the P. & O. line for Bombay and Jullundur City, India, I stopped off three days at Geneva. It was to this city that Daviel came in the hope of being benefited by the baths, at that time in great repute. He was then sixty-eight years old, broken in health and suffering with paralysis. I have not been able to learn the form of paralysis from which he suffered, but infer that it involved the vocal chords at least, for it is well known that his last paper before the Royal Academy of Surgeons of Paris, in which he described some new points in his extraction operation and recommended the use of a smaller number of instruments for its performance, had to be read by one of his friends.



But the change did no good and he died in Hotel Balance in 1761. Five years ago the old house, which had become an eyesore on beautiful Rue du Rhone, was razed to the ground and a

modern building now occupies its place. To the average person the fact that the great Daviel breathed out his life within its walls had no significance, no public sentiment attached to it, hence there was no demand for photographs of the old hotel; consequently I found it impossible to secure a photograph even from the owner of the ground on which it had stood or from the lady who for many years had been its proprietress. The best I could find was an engraving in a little book, "Geneva Past and Present," showing the Rue du Rhone as viewed from the west, with Hotel Balance in the center. I was assured that this was a good picture. Unfortunately it is small and may not be easily reproduced.

In company with Dr. D. Guertin, a well-known Geneva oculist with whom I had had some correspondence relative to the matter, I visited the grave of Daviel<sup>1</sup> at the entrance to the cemetery of the Grand Saxonix Church, about two miles north of the city. Approaching the entrance from the north (which consists of fourteen stone steps with a double iron gate less than half-way up), we face an ivy-covered stone wall about ten feet in height which surrounds



the cemetery. To the left of the entrance set in this wall is a marble slab. Near the top we noticed a medallion bust of the

1. I have been informed that there is some question as to the exact location of his grave in the cemetery.

master and above it the inscription "Post Tenebras Lux." Below, in French, it is stated that he who first cured cataract by extraction is buried in this cemetery.

This simple headstone, erected in 1885 by the oculists of Switzerland to the memory of Daviel and his achievements, is a humble but grateful tribute to a foreigner, for Daviel was a Frenchman.

In Europe, where monuments are everywhere to be seen commemorative of almost everything that has ever happened, one wonders why one befitting the life and work of this great master does not tower its tip heavenward, to be kissed by the rays of the rising sun as it dispels the darkness and gloom of night. "Post Tenebras Lux," just as the master hand had so often dispelled the darkness and gloom from the eyes of his fellow beings.

Our Calvinistic friends have the same ground for complaint. I was told that the great reformer sleeps in an unknown grave in or near the city. A small tablet above the door and a gate which once led into his garden are all that are left to show where the great man once lived. The world seems to have always admired statesmen and military heroes and to have perpetuated their images and deeds in bronze and marble, while the real benefactors of the race—men who have really done *great things* for the health and happiness of their fellowmen—have in many instances slept in unmarked graves and have been simply tolerated as cranks or men of one idea. This seems to have been true of medical men in that day, and the pity is it's true today. In a well-known tragedy it is said "The evil which men do lives after them; the good is oft interred with their bones." Let us paraphrase this to read: The good these men have done lives after them, etc.; let us hope that all of error in their teachings was interred with them.

"Jacques Daviel was born at La Barre, Normandy, Aug. 11, 1696. He studied at Rouen and at the Hotel Dieu in Paris. In 1719 he was sent as 'plague physician' to Provence and for the service there rendered he was appointed surgeon to the city of Marseilles, France. There he was made professor of anatomy and surgery, but from 1728 he employed his time exclusively in the treatment of eye diseases and he became so renowned that he was repeatedly called to Portugal and to Italy. In 1746 he settled in Paris and in 1749 he received the appointment of surgeon-oculist

to the king. In 1750 he was called to attend the Kurfürstin at Mannheim. In 1754 he was summoned to see Ferdinand VI of Spain, and later he was once more called to see the Princess Clemens of Bavaria. To restore his shattered health he went to Bourbon and to Geneva to take the baths, at which latter place he died."—*Stricker's Crystalline Lens System*, page 272.

Daviel lived at an opportune time. The reclination or couching operation for the cure of cataract was such an incomplete surgical procedure and dangerous to the future integrity of the eye that it was doomed to be supplanted by a more thorough and rational procedure as soon as the true nature of cataract was understood, and a bold and independent thinker began to study and experiment with different operations for its relief. This came about in 1705, when Brisseau by post-mortem examination confirmed the earlier observation of M. Lasnier by showing that the cataract which he had couched in a soldier's eye was not a pupillary membrane (as cataract was then believed to be), but was an opaque crystalline lens. Had the observation of Brisseau been accepted as correct and efforts made to confirm or disprove it, instead of it being ridiculed by the French Academy of Surgery, there would be a different tale to tell, and the monument to the first surgeon who, *with design and purpose, extracted the lens* for the cure of cataract, I think, would not stand in the Geneva cemetery, as I have related. We have fragmentary and unauthenticated accounts of extractions having been made earlier, but these cannot be accepted on the evidence submitted. But there is no question, I think, that Du Petit in 1708 and Duddell in 1729, and possibly St. Ives in 1705, and probably others, had extracted through a corneal incision lenses which they had dislocated into the anterior chamber in attempt at couching, but none of these operators nor of those who followed them seems to have thought of directly approaching the lens through a corneal incision and making a primary extraction. No one seemed to have the so-called foreknowledge and keenness of observation and surgical acumen to see that extraction was based on correct principle. A little later Daviel appeared on the stage. He seems to have been an original thinker who had had great experience with the couching methods and knew their shortcomings.

In the well-known cases of the Hermit of Provencia, having

dislocated the lens into the anterior chamber in attempts at couching his cataract, which he cut into small pieces in the attempt, the chamber filled with blood, so that he could not see his needle; he therefore withdrew it and opened the cornea and evacuated the blood and pieces of lens "as Du Petit had done in 1708," and the man could see, although this eye was lost from infection. We must believe that the immediate good result made a profound impression on David, because he soon afterward, on his way to Mannheim to operate the left eye of Madam La Princesse de Deux-ponts, made the statement that henceforth he would extract all cataracts. This statement clearly establishes the claim that he was the father of the extraction operation.

Jullundur City, India, Oct. 26, 1909.

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## THE TRACHOMA BODIES FROM THE NORMAL CONJUNCTIVA.\*

(A Preliminary Report.)

By S. HANFORD MCKEE, B. A. M. D.,

MONTREAL.

(Illustrated.)

Whether the trachoma bodies first described by Halberstaedter and Prowazek are protozoa or not, and whether the etiological factor in trachoma, cannot be decided until a great deal more work has been done on this subject. The number of cases of accidental trachoma among the profession and laity places beyond doubt the contagiousness of this disease. We need, however, more proof than we have at present, that the cause of this contagion has been discovered. Are the Halberstaedter and Prowazek bodies ever present in non-trachomatous eyes? To satisfy myself on this question, I lately examined a series of non-trachomatous adult patients, with negative results. Recently I undertook the examination of the conjunctivae of infants. I wished to examine some cases of gonorrhoeal and non-gonorrhoeal ophthalmia neonatorum, but there being no cases at the Maternity Hospital, I decided to examine some normal conjunctivae. Two cases were brought to me by the nurse. The conjunctivae were examined and found normal. Smears were prepared in the usual way. The slides were fixed in alcohol and stained by giemsa 1-20 for one hour.

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\*From the Pathological Laboratory of the Montreal General Hospital.

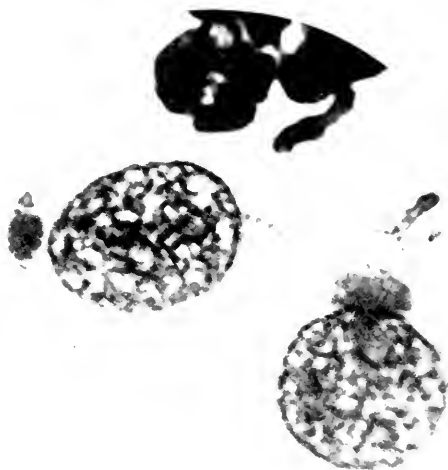


Fig. 1.

Examination revealed numerous epithelial cells, with the identical inclusions described as characteristic of trachoma. This

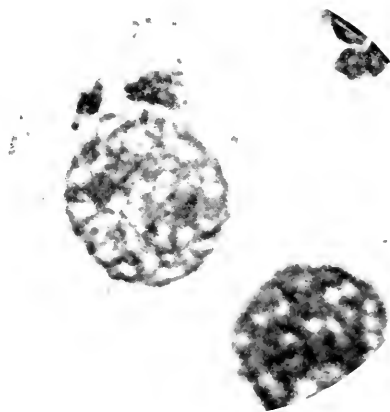


Fig. 2.

was not an isolated finding, nor could there be any doubt about the bodies. Numbers of cells were seen with the bodies away from the nucleus, and covering the nucleus like a cap. They were more

numerous than in some of the cases of trachoma which I have examined, and with the slides under different microscopes, it was impossible for experienced laboratory men to say which was the slide from trachoma and which the one from the normal conjunctiva.

Fig. 1 shows a micro-photograph of 2,000 diameters from a case of trachoma.

Fig. 2 shows a micro-photograph of 2,000 diameter, from the normal conjunctiva of an infant. At the end of the nucleus of the epithelial cell, one sees two bodies, one is oblong and almost identical with one body in Fig. 1, while just to the right of it is another body, similar to the second body in Fig. 1. With the fine adjustment, the red granules were seen much better in the bodies from the non-trachomatous eye than in those from the trachoma case. The micro-photograph tells better than any description, that the trachoma bodies occur in the normal conjunctiva. I am indebted to Dr. S. B. Wolbach for the micro-photographs.

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## A FEW NOTES ON OPHTHALMIC SURGERY.

BY G. EDGAR DEAN, M. D.

SCRANTON, PA.

### Treatment of Glaucoma by Electricity.

In cases of moderate glaucoma superinduced by eye-strain, I have avoided the necessity for operation by using, say, four to six-cell galvanic current with the negative pole to the eyes and the positive to the back of the neck—a mild stable current continued for ten minutes at a sitting, seldom longer, and repeated it *pro re nata*. This procedure is not original with me, but is drawn from the experience of the late Dr. Maurice F. Pilgrim. However, it would seem that I have employed this means of reducing tension more extensively than the originator of the method. Of course glasses were prescribed when the eyes could be safely examined.

### Pterygium Operations.

I have varied one of the usual operations for pterygium so as to render it uniformly successful. The ultimate results with the established modes of operating I found too uncertain as to permanency. My plan is to dissect back the diseased tissue to its base in the usual manner; then, leaving it attached there, I make a vertical incision of the conjunctiva near its corneal attachment.



Next, draw together and suture the horizontal edges of the conjunctiva, thus covering the space from which the vascular tissue has been removed; complete the operation by placing the wire loop of a galvanocautery snare over the vascular flap of tissue and actually *burn it off* at its base. I have never known a pterygium to return when thus treated.

### Operations for Hyperphoria.

In operating upon the vertical muscles in case of hyperphoria I have noticed that the condition is apt to return when the tendon becomes reattached if the operation be performed on the superior rectus. I have found by actual experience that if the operation be performed upon the *inferior* rectus of the opposite eye the probabilities of permanent results are more than doubled. I have succeeded by this manoeuver, after failure to get satisfactory results by operating upon the superior rectus—even with complete tenotomy.

### Hydrogen Peroxide in Corneal Ulcer.

Without detracting from the value of the operation of Saemisch in suitable cases of hypopyon keratitis, in my hands, at least 50 per cent of diseases of this kind have been treated in recent years without resort to operation and without the use of the galvanocautery.

My plan is to wind an applicator with a little absorbent cotton (snipping off with scissors the trailing fibres at the extremity), to cocaine the eye, and then dip the cotton into full strength peroxide of hydrogen, and apply the tip to the ulcerated point—holding it there a few seconds to allow the antiseptic solution to penetrate the deeper layers of the cornea. This is generally repeated daily. Sometimes I make use of this procedure after removing a cinder from the cornea—especially where shopmates have used unclean instruments in well meant efforts to remove the foreign substance.

### Double Suturing of the Wounded Eye.

In two cases I believe I have saved the eyeball when it had been cut open for at least an inch across the cornea and sclera by a flying piece of iron. This injury was accompanied by escape of, perhaps, half the vitreous. In these cases I employed a double set of fine catgut sutures—first suturing the sclera and then the conjunctiva separately. The wound healed promptly.

In each case the ciliary region was injured and, naturally, traumatic cataract ensued within a month, though the lens itself remained uninjured at the time of the accident. The net result, in each instance, was retention of a globe with a lineal scar on it.

### Various Methods of Cataract Extraction.

One reason why the practice of ophthalmic surgery has been so rich and varied in this country is that so large a percentage of American ophthalmologists have studied in various cities abroad, and thus learned breadth of view. For instance, while on the continent of Europe, I observed six different modes of performing (senile) cataract operations, by as many different operators. The result of seeing all this in perspective, so to speak, is to prevent the American ophthalmologist from adopting one stereotyped mode of procedure and say "this is my choice," but to say to himself, "Ah! I see; one operation is better suited for one class of cases and another for another class."

By way of example, one might instance the operation performed by Schweigger of Berlin (since deceased). He frequently made the downward incision with his own modification of Beer's knife, and he operated without iridectomy—using a double spud for fixation. This struck me as the ideal operation for patients having a shallow anterior chamber, or where, for some special reason, rapid operation is desirable. In certain other cases it would be rejected for the reason that the upper lid furnishes a better covering for the flap than does the lower.

### Lachrymal Obstruction.

In operating for stricture of the *ductus ad narem*, I have found that it is seldom necessary to slit up the canaliculus, if one is provided with a very narrow, straight canaliculus knife. One would not deliberately choose to have an open sewer where he can have a closed one.

When the case first comes under inspection, if the opening at the punctum proves too narrow for the entrance of an exploratory probe, I insert the point of an old cataract knife and incise the punctum *inwards*. In the average case, it is then smooth sailing until we reach some point in the nasal duct—very frequently at its entrance.

As the ordinary probe is a poor tool, I had a workman con-

struct one for my personal use from a square silver bar. It is strong at its base and tapers towards the extremity into a delicate probe; and has a small but carefully proportioned olive point. I usually open the passage somewhat by probing at least once or twice, before proceeding to operate upon the strictures. This gives one more intimate knowledge of them, and gets the relatively more healthy tissues out of the way. In cutting through the stricture I generally turn the knife, and incise them in two or three directions.

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### DEFECTIVE EYESIGHT IN CHILDREN.

Recent reports of Dr. Maxwell and of Leonard P. Ayres, director of the Bureau of Child Hygiene of the Russell Sage Foundation, that children with defective eyes apparently made equal progress with normal children, whereas those with all other defects, such as enlarged glands, adenoids, defective teeth, etc., progressed more slowly, have been quite puzzling to many. They could not understand how a child with a defect in the organ most used in acquiring his education was less hampered than one whose teeth, for instance, were imperfect.

As an explanation, Dr. George W. Vandegrift, an eye specialist, with much experience in free clinics, has given his opinion as to how this could be possible. He says in a recent communication:

"This reported result is not so remarkable when we consider that only a little portion of the whole matter is ever touched upon in this work. Children with defective long vision are always detected and discussed, never those with normal distant vision, but defective eyes. These might be found in large numbers, but are absolutely ignored. A child with defective distant vision will naturally turn to his books, for there his vision is best. Notice the Germans with high percentage of myopia (short-sightedness). Again it is a matter of experience among the oculists that subjective symptoms as well as objective symptoms are rare in young children as the result of eye strain. Most children do not complain of headaches, etc., till high school. If years pass before the effects of the defective sight are felt, is it not a possible explanation why a high percentage of defective vision may be found in the bright children? There is no reason, however, why defective vision does not retard progress. How can we tell how much brighter a boy might be if

his eyes were normal? I believe that if every child in school were examined and defective eyes with normal distant vision were discovered, our figures would be very, very different. How can we tell anything about the effects of eye strain for near work when we only study the distant vision?

"We cannot do properly for children's eyes till every one is examined—the defective with defective sight—others who are supposed to be normal yet are defective, a class that suffers the more because it is undiscovered and neglected till the damages are done."

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### HEREDITY OF EYE DISEASES.

From an extensive statistical investigation of hereditary eye diseases, especially myopia of high grade, Crzsellitzer has shown that the first-born children of families hereditarily affected are much more liable to inherit eye defects than the later children. The consanguinity of the parents is also shown to be a predisposing factor in such heredity. Further, the statistics show that myopia is more frequently transmitted by the mother than by the father. Female children are more apt to inherit myopic defects than male children, while the males seem to show a greater tendency toward the inheritance of other eye lesions.

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### TEACHING OF OPHTHALMOLOGY.

In a paper read before the Association of American Medical Colleges at the recent meeting in Baltimore, Dr. A. R. Baker, of Cleveland, says: "If all medical schools taught their students how to refract, the family physician would be in a position to do this work, the optometrist would pass out of vogue, and we would not have to fight optometric legislation. The teaching of ophthalmology is not carried out properly in most medical schools, the average teacher is contented to do a few cataract operations, to exhibit a few cases of obscure diseases of the eye, to point out the difficulties of diagnosis, and to impress on his students not to meddle with the eye, but to send all these patients to the specialist. I would advise teaching anatomy, histology and embryology of the eye to the freshmen, physiologic optics to the sophomores, refraction, retinoscopy and ophthalmology to the juniors, and practical work to the seniors."

## Reports of Societies

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### COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting of February 19, 1910, in Denver.

DR. WILLIAM C. BANE, Presiding.

#### Operation for Advancement of a Lateral Rectus Muscle.

Dr. C. E. Walker furnished the following description, showed the suturing on a pig's eye, and presented cases upon which he had recently operated. Instill cocaine (4 per cent) three times, at intervals of a few minutes. Cleanse skin and conjunctival sac with sterile warm water. Pick up conjunctiva with rat-toothed forceps; and make incision with strabismus scissors through conjunctiva and subconjunctival tissue to sclera, in front of tendon to be advanced, and undermine towards cornea. Cut through capsule at border of tendon. Pass smooth blade of Prince's forceps under tendon and draw it towards cornea. Then clamp forceps and cut tendon close to sclera. Grasp with forceps the inferior rectus muscle, including conjunctiva and fascia, about the middle of the insertion of the tendon. Introduce a full-curved needle, threaded with doubled silk, prepared according to Worth, in the direction of the muscle to be advanced. Pass needle under muscle to to advanced about one-fourth of the width of the muscle, through muscle, capsule and conjunctiva. It is then entered at the upper side and passed through conjunctiva, capsule and muscle about one-fourth the width of muscle from upper border. Leave loop of suture over muscle. Grasp with forceps the superior muscle, including conjunctiva and capsule, about the middle of the insertion of the tendon, then pass suture through the tissue and pass it through loop over middle of muscle to be advanced. Cut off needle. Cut off the required amount of tendon from muscle to be advanced. Pull the suture and take up slack (Howe's forceps are often of service), and make a double tie. Test the eyes and tighten suture until the result that is required is obtained; then make a bow knot. Wash and bandage both eyes. Test and adjust suture on the following day if required; if not, remove bow knot by pulling end through and cut off ends of suture. Keep eyes bandaged for a week, dressing them daily. Remove suture and keep eyes quiet for a few days longer.

Dr. Walker presented three patients upon whom he had recently advanced the internal rectus by the above method, for divergent

strabismus. On February 1 he operated on a patient 23 years of age, showing 30 degrees + of exotropia; on February 3, a patient of 15 years, with exotropia of 19 degrees and hypertropia of 2 degrees, and on February 14, a patient of 17 years, with exotropia 12 degrees. In each case the result was exceptionally good.

#### **Partial Tenotomy of the Superior Rectus.**

Dr. Walker also presented a patient of 55 upon whom he had done a partial tenotomy of the left superior rectus, on February 12, for 7 degrees of hypertropia; and another, aged 43, on whom he had done Worth's operation for advancement of the external rectus of the left eye, with tenotomy of both interni, for 25 degrees of esotropia, December 18, 1907, and partial tenotomy of the left superior rectus for 2 degrees of hypertropia, February 17, 1910. In both these cases normal vertical balance was restored.

#### **Extensive Wound of Ciliary Region.**

Dr. D. A. Strickler presented a child of 4 years who, on January 7, while running across the floor with an open toy knife, had fallen on the knife. The blade entered the eyebrow at the outer margin, glanced downward and passed through the tissues of the lid into the eyeball. The incision in the eyebrow extended horizontally 7 mm. The incision in the eyeball extended from well back of the ciliary body, at about the junction of the middle with the upper third of the sclera, forwards and slightly upwards across the ciliary body, incising the cornea to the extent of 3 mm. The full length of the incision was 12 mm. When first seen, a few hours after the accident, the line of incision was widely gaping, black in color, and the anterior chamber filled with blood. He was put to bed and iced cloths ordered, and continued for several days. As the anterior chamber cleared of blood it was found filled with lens matter. The wound continued to gap widely, with occasional escape of aqueous, until the lens matter was partially absorbed; when it closed rapidly, leaving only a white line of sunken scar tissue. At no time since immediately after the accident had the patient indicated in any way that he suffered, nor had there been any redness or injection of the eye, ciliary or conjunctival. There had at no time been any prolapse of iris or ciliary body. The lens was now nearly absorbed and the eye perfectly quiet. The case was presented as one of extreme injury, healing entirely without incident.

## DISCUSSION.

Dr. Sedwick had seen a similar case, except that the lens was not injured. The anterior chamber was full of blood, iris and vitreous protruding. The prolapsed iris was pushed back, and the eye recovered from the severe injury.

Dr. Boyd said that a cut through the ciliary processes was far more dangerous than one between them.

Dr. Walker made the same comparison as to ciliary versus scleral wounds.

Dr. Jackson related a case of knife wound through the ciliary body and lens, with loss of sight; but no sympathetic irritation had developed after many years.

**Wrinkled Lens Capsule.**

Dr. Strickler also presented a mechanic, aged 54, who had first appeared on December 27, with a history of having been struck in the left eye by the end of a  $\frac{5}{8}$  inch bolt. The eye pained him at the time and for a few days thereafter, during which time it was red and inflamed. All signs of pain and redness had disappeared when first examined. Vision=fingers at 5 feet with  $+4$  spherical =20/200. A small central cut of the cornea, with posterior synechia at outer margin of pupil and a somewhat stellate opacity of the anterior capsule, was found. The vision remained about the same. The case was presented because of the peculiar kaleidoscopic play of shadows noted in the lens when the head of the examiner was slightly moved laterally, with a strong  $+$  lens in the ophthalmoscope. The shadows were entirely independent of the opacities.

## DISCUSSION.

Dr. Jackson noted that the iris was adherent to the capsule, that the radiating lines were of a round and wavy character, and believed that the capsule was wrinkled.

Dr. Black concurred in this belief.

**Unusual Lens Opacity.**

Dr. Strickler also showed a woman of 63 who had presented herself on February 7 for measurement of her refraction, with the proper lens vision in each eye =20/30. Upon examination of the right eye with the pupil dilated, a well marked opacity of the lens, confined to the outer segment was discovered. It was apparently of long standing, with rounded smooth margin, suggesting a sta-

tionary condition and good prognosis. The case was presented because of its rarity in Dr. Strickler's practice, and with a hope of enlightenment as to probable causation and prognosis.

#### DISCUSSION.

Dr. Wright thought the lenticular opacity was congenital, and similar to anterior or posterior polar cataract.

Dr. Neepor recalled a case with similar opacity, and in which complete cataract developed within a year.

Dr. Walker considered the localized opacity to be traumatic and that complete cataract would supervene.

Dr. Jackson thought the opacity might be traumatic, that it was in the cortex and not spicular, and if unchanged in five years he would then say it was not senile. He had seen a similar case, due to contusion of a whip lash during childhood, that showed no changes between 80 and 90 years, and had probably remained stationary through life.

#### Spontaneous Dislocation of Lens.

Dr. W. A. Sedwick showed a man of 65, with a history of senile cataract of the left eye of at least twelve years' standing, and glaucomatous attacks in this eye requiring paracentesis twice in August, 1909. Examination in November had revealed complete cataract. The correction of —5.50 spherical in right eye gave

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V = — —. On February 1 the patient stated that sight had re-

30

turned to the left eye during sleep. Examination showed the cataractous lens to be dislocated downward and inward behind the iris, a small portion of its margin showing in the pupil. In the upper and outer quadrant of the pupil could be seen a delicately opaque membrane, and the iris was tremulous. Dr. Sedwick raised the question of removal of the opaque lens, and as to whether or not it had been dislocated in capsule; and if so, what structure showed the opacity in the upper and outer part of the pupil. No pain or inflammatory changes had followed, and no coughing or sneezing had preceded the dislocation.

#### DISCUSSION.

Dr. Black stated that the integrity of the eye depended upon removing the dislocated lens without delay. The operation would



not be difficult, and not dangerous if dacryocystitis was not present.

Dr. Boyd spoke of good quantitative vision and a quiet eye for five years after dislocation of a cataractous lens.

Dr. Walker thought that the position of this lens, near the ciliary body, was unfavorable. He would remove the lens, if possible, and failing, might advise removal of the eye.

Dr. Jackson suggested removal, with the loop, through an upward incision.

Dr. C. M. Hosmer believed the cataract was hypermature, that the capsule had ruptured, and that the lenticular nucleus was dislocated downwards.

Dr. Sisson considered the opacity in the upper and outer portion of the pupil to be due to tags of capsule.

Dr. Libby stated, in reply to question raised as to absorption of the dislocated lens, that he believed this very improbable as it was calcareous in spots.

### **Glaucoma With Cataract.**

Dr. G. M. Wright presented a man of 68, who had lost one eye because of uncontrollable pain of glaucoma two years before, and was suffering from posterior synechia, cataract and tension of  $+1$  to  $+2$  in the other. The vision was reduced to light perception and projection in the nasal field. Eserin solution, 2 grains to 1 ounce, was being used. The pupil was small and the patient complained of no pain.

### **DISCUSSION.**

Dr. Black suggested the subconjunctival injection of 15 to 20 drops of 4 or 5 per cent solution of citrate of soda, two or three times a week, according to the suggestion of Fisher.

Dr. Coover suggested posterior sclerotomy.

Dr. Jackson thought sympathetomy should be considered.

Dr. Neepor spoke of an effective iridodialysis of 5 to 6 mm. in length, in a case which had been under the care of Dr. Patterson and himself.

Dr. Coover would go far back and tear off the iris, if he did an iridectomy.

### **Corneal Papillary Growth.**

Dr. G. F. Libby presented a coal miner, aged 60, with a

growth  $2 \times 5\frac{1}{2}$  mm. and  $\frac{1}{2}$  to 1 mm. thick on the external cornea-scleral limbus of the left eye. It was papillary in character and extended obliquely across the limbus, with engorgement of the vessels running to the external canthus. The growth had first appeared two years before. It had always been painless, the patient only being conscious of it when viewing the growth in a mirror. R. V. = 4/5 partly, L. V. = 4/6 partly. Ophthalmoscopic findings and transillumination were negative. In the three months and a half that this patient had been under Dr. Libby's observation, the growth had not increased in size, although the vessels between it and the external canthus had become somewhat more engorged. A differential diagnosis between papilloma and epithelioma seemed both difficult and highly desirable.

#### DISCUSSION.

Dr. Black would slice the growth off clean, and thought the microscope would reveal its nature. He had seen a similar case of two years' duration, which was attached to cornea and conjunctiva. Careful dissection had been followed by good healing after a week.

Dr. Coover thought there was probably a foreign body beneath this neoplasm.

Dr. Neepor had seen a similar case of about two months' duration. He applied 50 per cent nitric acid, together with curetting of growth, three times. No foreign body was found; but the tissue of the growth, which was fully removed, was gristle-like. Healing was complete in two weeks.

Drs. Jackson and Bane thought the growth looked like epithelioma; but Dr. C. M. Hosmer thought it had more the appearance of granulation tissue.

Dr. Walker would find the nature of the growth by the microscope, and if it were epithelioma, the question of enucleation of the eye would have to be decided.

Note.—The growth was subsequently curetted off the cornea and sclera, leaving the cornea perfectly clear. After eight days the corneal epithelium was restored, the engorged vessels resumed normal calibre, and healing seemed complete.

Dr. J. C. Todd reported: "The tissue shows the histologic structure of squamous celled carcinoma. I have shown the slides to Dr. J. A. Wilder, who concurs in this diagnosis."

**Persistent Hyaloid Artery.**

Dr. W. C. Bane presented a girl of 14 years, with persistent hyaloid artery in the right eye. The anomaly consisted of two vessels twisted on each other four times between the disk and the terminal point, six diopters into the vitreous. The upper vessel arose from the center of the disk, where it met and passed under the returning vessel, which was connected with the vein at the lower nasal margin of the disk. At the second turn the lower vessel passed under the upper one. The vessels were of the same size and color, and blood was passing through the loop. The vessels were about half the diameter of the lower nasal artery of the retina. The end of the loop floated in the vitreous. The vision of each eye has 20/15 with correcting lenses.

**Glaucoma Following Injury of Lens.**

In the case of "Steel in the Vitreous," reported by Dr. Bane at the December, 1909, meeting, secondary traumatic cataract and glaucoma followed the operation of removal of the steel by the magnet. The foreign body had been removed through the wound of entrance in the lens, iris and cornea. Removal of the lens matter relieved the increased tension; and the eye soon became quiet. Good vision resulted, with the correcting lens.

**Sympathetic Ophthalmitis.**

Dr. G. H. Strader reported the case of a boy of eight years, who had stuck a knife into his left eye November 10, 1909, and scratched the eyeball a little above its center. No trouble was noticed for three months, when both eyes became inflamed and vision blurred. Examination then showed a healed penetrating wound of the left eyeball at the upper corneal limbus, deep circumcorneal injection, tension minus, pupil secluded and occluded, light perception and slight, with no projection. R. V. = fingers at two or three feet. This eye showed all the symptoms of severe plastic iritis, with annular adhesion of pupil to lens capsule. The cornea was very hazy from deposits on its posterior surface. A view of the fundus could not be obtained. The exciting eye was enucleated at once. Two hours later the patient was given 30 grains of soda salicylate by the rectum, and this dose was repeated every two hours until 120 grains had been given. The next day the right eye was markedly improved. Salicylate by rectum was

continued three days, after which 45 to 60 grains per day were given by the mouth. At the end of one week salicylate was omitted. On the next day the eye was markedly worse. On two other occasions no salicylate or aspirin was given, and each time the eye promptly became worse. In addition to salicylate he had, at intervals, inunctions of mercurial ointment and atoxyl hypodermically to the amount of about 25 grains. The eye became practically free from congestion. No salicylate had been used for 10 days, but three doses of 30 minims of a 10 per cent solution of atoxyl had been given. V. = fingers at 15 to 18 feet. The pupil had a thin veil of exudate covering it, though this seemed to be clearing, and vision was improving. In all this case had received an average of nearly 30 grains of salicylate and aspirin each day since December 13. The boy's weight was about 60 pounds.

### **Cryptophthalmos.**

Dr. J. H. Coover exhibited photographs of a woman of 24 years of age and her child of 7 months, each showing binocular cryptophthalmos. Dr. Coover had removed the globe of one of the baby's eyes the day before, finding it the size of a hazel nut, adherent to both upper and lower lids, with a few cilia on the upper lid. An exactly similar condition had been found in the mother, on whom Drs. Marbourg and Coover had operated 16 years before. The father's eyes were normal. Dr. Coover will report these cases in full later.

GEORGE F. LIBBY, Secretary.

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## **COLLEGE PHYSICIANS OF PHILADELPHIA.**

Meeting February 17, 1910.

DR. WILLIAM ZENTMAYER, Chairman, Presiding.

### **The Significance of Venous Hyperemia of the Retina.**

Dr. Howard F. Hansell, after sketching the origin and course of the larger veins of the orbit and the influence exerted on their caliber by tumors or other diseases of adjacent parts, called attention to the tortuosity of and distention of the retinal veins in affections of the sympathetic nervous system, excluding those cases in which retinal hyperemia was the precursor of retinitis or neuritis, or a sign of brain disease or of defined disease of the orbit or accessory sinuses. The alteration in the caliber of the retinal veins was ascribed to vasomotor changes or underlying disease of the sympa-

thetic system described by Dr. S. Solis Cohen under the name of "vasomotor ataxia." Widening of the commissure, tremulousness of the lids when closed, lagging of the upper lid after the ball when the ball is rotated downward, inequality in the size of the pupils and retinal hyperemia were frequently associated eye signs. All of them were intermittent. Dr. Hansell thought these signs were the expression of a deranged function of the sympathetic system: a relaxation or overstimulation of the vasomotor nerves and of the unstriated muscular tissue abundant in the orbit.

Dr. Risley congratulated Dr. Hansell upon his valuable contribution and thought sufficient attention had not been paid to the excellent work of Dr. Cohen on vasomotor ataxia. Dr. Risley said that he had some years ago presented to the American Ophthalmological Society a paper in which a group of cases with exophthalmos and tachycardia and the other group of symptoms characteristic of Graves' disease had been associated with dermographism, and in one case with marked contraction of the fields of vision, but he had not at that time appreciated the significance of the dilated intra-ocular blood vessels. He was therefore glad that Dr. Hansell had called attention to this symptom in association with the other and significant group of conditions associated with vasomotor disease.

Dr. James Thorington said that in connection with the interesting remarks of Dr. Hansell on the subject of enlarged retinal veins, he wished to draw the attention of the members of the section to his experience in the study of enlarged retinal veins in the eyes of many of the children in the schools for feeble-minded. He was sure that Dr. Risley, who had also examined many of these children, could bear him out in the statement that the condition was unusually frequent as compared with normal patients. Whether the condition was due to the tuberculous condition of many of these subjects, or due to their sedentary life was a question. One patient of Dr. Cohen's that he had seen had vasomotor ataxia, and the accompanying symptoms, large veins, etc., but no change in the fields.

Dr. Ziegler cited as an unusual condition the presence of fugitive red vision observed by him in a case of retinal congestion caused by sudden pulmonary edema.

#### **Sudden Obstruction of the Retinal Circulation.**

Dr. D. Forest Harbridge (by invitation) reported the follow-

ing cases: He stated that the first case, one of monocular visible spasm of the central artery of the retina, reported at the December, 1905, meeting of the section, had had no recurrent attacks since December 7, 1905.

Case II. Transient monocular hemianopic blindness in a patient, aged sixty-three years, the subject of valvular regurgitation and a moderate degree of arteriosclerosis. The attacks recurred at frequent intervals during a period of fourteen months, but since June 7, 1906, the date of the last attack, there had been no recurrence.

Case III. Sudden obstruction of the retinal circulation in a patient aged thirty-one years. The eye became absolutely and permanently blind in about five hours. A great variety of circulatory changes were observed, at times the vessels were practically normal in size, at others greatly attenuated, and still at another time the columns of blood were broken, the current passing in the normal direction, on other occasions in the reverse direction. The patient died, due to uremia, ten months later, and six or seven years after the first premonitory symptoms of misty vision.

Dr. Harbridge believed that the three cases above cited could be accounted for by assuming that primarily they were dependent upon some one of the various types of arteriosclerosis.

Dr. Zentmayer said that he had been privileged to see all three of Dr. Harbridge's cases. The one resembled closely a case previously reported by him of inferior hemianopsia, in which at first there had been temporary obscuration of the whole field, followed by limitation of the temporary blindness to the inferior field, with finally permanent blindness of this area and atrophy of the upper half of the nerve with sclerosis of the superior vessels. Later the left eye went through the same phenomena in the superior field, but as yet the blindness has not become permanent. The condition was ascribed to sclerosis of the ophthalmic artery pressing the nerve against the dural sheath which spans the nerve near the optic foramen. Dr. Zentmayer said that the course of Dr. Harbridge's cases showed how difficult it is to properly advise such patients. He recalled that Dr. Harbridge's first patient had been told by one of his consultants that he would probably become blind in the affected eye and advised iridectomy. Yet several years had now elapsed, and there had not even been a recurrence of the attacks. While

in the third case blindness had resulted a short time after the onset of the attacks of temporary blindness.

### **Blindness Followed by the Passing of Electric Current.**

Dr. S. D. Risley presented a paper detailing briefly a history of two cases in which blindness had followed the passing of electric currents of high potential through the body. In one case the loss of vision was monocular and transient, lasting about two hours, with a brief recurrence of partial loss a few hours after recovery from the first attack. The blindness followed the use of the so-called "electric breeze" produced by the static machine. The second case was caused by repeated shocks from an overhead trolley wire in the mines of West Virginia, carrying two hundred volts and carried through his miner's lamp. The last shock was received in June, 1909, and was so severe as to cause loss of consciousness. When he recovered his higher cerebral functions he had gyrating wheels of fire before his eyes, and when these disappeared he had impaired vision, which grew worse day by day, finally driving him from his employment. When seen first by Dr. Risley, in December, 1909, there was no perception of light in the right eye, and fingers were counted with difficulty in the left, and the field, which could be taken only with the candle flame, was narrowed to about 20 degrees. The optic nerves and retinae were healthy, notwithstanding the total blindness of the right eye, the pupil reacted to light thrown upon any part of the retina, and both concentrically and in convergence. The man was unusually helpless, and notwithstanding his ability to count fingers with his left eye had to be led about the wards of the hospital. He had melancholia, and not only threatened to commit suicide, but on one occasion attempted to throw himself from the window. Dr. Risley regarded the case as one of injury to the higher visual centers, a view which found corroboration in the man's physical condition, which at times suggested hysterical blindness, but there were no other stigmata of hysteria. Under rest in the hospital, with daily application of galvanism and tonics, perception of light had returned in the right eye, and the field of vision in the left, which had increased to 30 degrees, could be taken with the white ophthalmoscope handle, but his helplessness still remained.

Dr. Langdon said that he had had the privilege of seeing this case at Dr. Risley's office and had had an opportunity to study it.

There were certainly no fundus changes, the pupils responded well to light, and there was present an unusual amount of hyperopia, between 9 and 10 D. At that time the fields had not been taken, but the case impressed him as having a functional element in it: by that he meant the man thought his vision was worse than it actually was. The fields with the concentric contraction of the left eye and the loss of vision in the right made it very difficult to think that the lesion was in the tracts back of the chiasm, for the field of the left eye should be hemianopic; and the retention of the light reaction showed that the optic tract was unbroken as far back as the geniculate bodies and corpora quadrigemina.

Dr. Ziegler thought these cases of electrical injuries might have a mixed etiological origin due (1) to the light flash of the arc when the circuit contacts were made, and (2) to actual electric shock from transmission of the current through the body.

He related such a case seen by him some years ago, in which there was retinal anesthesia, contracted fields, and greatly lowered vision. On a few occasions there was crossing of the fields, which would suggest an hysterical element, but this anomaly was probably caused by retinal fatigue and exhaustion. Negative galvanism was applied for one year, resulting in the recovery of useful vision with greatly broadened fields.

#### **Intra-ocular Newgrowth.**

Dr. Zentmayer presented a patient with an *Intra-ocular Newgrowth*. The patient, a man aged forty-nine years, first noticed a black spot before the left eye two years ago. He was seen by an ophthalmologist, who gave the information that one year ago he had mapped out a scotoma in the field of vision, but overlooked the principal fundus change because of the small pupil, attributing the field defect to the pallor of the nerve. When first seen by Dr. Zentmayer, three months ago, there was a mound-like swelling, over which the retina appeared steel-gray and somewhat mottled, with a few shining areas. The surface was rather smooth and the margins fairly well defined. It occupied the fundus between the disc and the macula, not reaching either the fovea or the disc, and extended to the equator of the globe below. There was no secondary detachment. The disc was decidedly pale.

V—6-60. The form field is normal and there is an absolute scotoma up and out from fixation, quadrangle in shape, and about 17



degrees in extent, within 8 degrees of fixation, and extending within 3 degrees of the horizontal meridian. T.=N. There has been no change in any of the conditions since he has been under observation. The patient is a robust man, who, until two weeks ago, never had lost a day from his work as a freight conductor. During the past year he has been losing considerably in weight. The personal and family history are negative, and the physical examination, including examination of the blood, is also negative.

Because of the age and health of the patient, the rounded contour of the mass, its slow growth, and the absence of hemorrhages, the supposition is that it is a sarcoma, and the man has been advised to have the eye enucleated.

Dr. Risley expressed his belief that Dr. Zentmayer's course in advising enucleation was the only safe one to pursue. Notwithstanding the fact that the eye is now quiescent, he believed it would always be in danger from a lighting up of an acute inflammation through exposure, attacks of ill health or by blows upon the eye.

T. B. HOLLOWAY M. D., Clerk.

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## COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting March 17, 1910.

DR. WILLIAM ZENTMAYER, CHAIRMAN.

### Tuberculosis of the Conjectiva.

Dr. G. E. de Schweinitz demonstrated a boy, aged about ten years, whose left conjunctiva, particularly that of the lower lid, contained numerous somewhat flattened outgrowths, resembling granulation tissue separated from each other by deep furrows, but not in any particular degree pedunculated. The surface of these granulations was bathed in a rather free mucopurulent secretion. There was marked, rather dense enlargement of the parotid and submaxillary glands on the same side, as well as of the superficial and deep cervical lymphatic glands, especially those at the root of the neck. This condition of affairs had been present, according to the only but somewhat imperfect history that was obtained, for about three months, and the glandular involvement was said to have been preceded by a febrile period. General examination had failed to reveal any gross constitutional defects other than those which have been described. Von Pirquet's test was not typically

active, and the excised granulations which had been submitted to the preparations necessary for microscopic examination were not ready as yet for section, and therefore the histology of them could not be reported. A portion of the granulation tissue which had been implanted in a rabbit's anterior chamber had not as yet given evidence of proliferation, nor had tubercles formed in its neighborhood.

Dr. de Schweinitz discussed the various points in making a differential diagnosis between *tuberculosis of the conjunctiva* and *Parinaud's conjunctivitis*, and stated that it seemed to him more likely that the patient suffered from the former than from the latter affection. When the examinations to which reference was made were completed, which were to be reported at a subsequent meeting, the diagnosis could probably be settled definitely.\*

Dr. S. D. Risley said that he thought the symptoms suggested tuberculosis rather than Parinaud's conjunctivitis. The absence of increased temperature by no means excluded a tuberculous origin. He had repeatedly taken the temperature at intervals throughout the day and night without detecting any rise, in cases where subsequent injections of tuberculin were followed by pronounced reaction, both general and local, and where great improvement in general health and a cure of the local disease had followed the tuberculin injections. In the cases of Parinaud's conjunctivitis, which Dr. Risley had seen the granulation masses were more pedunculated than in the case under study.

Dr. Krauss stated that the case exhibited by Dr. de Schweinitz did not resemble the cases of Parinaud's conjunctivitis seen by him, in that the large follicles were more flat, scattered and had a very broad base. The pedunculated appearance of the granulomata was absent.

The glandular involvement of the lymphatic system in all of his cases consisted of more or less isolated glands extending in a chain from the preauricular gland to the submaxillary and anterior cervical glands. In the case reported at the section meeting of last October, the only suppuration occurred two months ago in the cervical gland just above the clavicle. It was excised, the contents

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\* Since the above paragraph was written a few fine yellowish-red points have appeared in the rabbit's iris.

being sterile bacteriologically, and consisted of broken glandular masses.

In Dr. de Schweinitz's case the glandular mass was more compact, involving especially the submaxillary and lower part of the parotid glands. Dr. Krauss regarded the differential diagnosis in this case very interesting and rather difficult. He thought it might be an atypical case of Parinaud's conjunctivitis, but he was inclined to believe with Dr. de Schweinitz that the case was probably one of tuberculosis of the conjunctiva.

#### **Unusual Form of Congenital Cataract.**

Dr. George S. Crampton presented a boy, aged nine years, who had a peculiar form of congenital cataract. The eyes were otherwise apparently normal. The vision of each eye was 6-20. There existed a markedly similar filmlike cataract in each eye, which was best seen with transmitted light, and was remarkably circular in outline, measured 5 or 6 mm. in diameter, and was probably situated between the nucleus and posterior pole. Each had the appearance of having an index of refraction different from that of the remainder of the lens. Occupying the center of each was a dotted triangle with base up. The opacities did not interfere with the clear view of the fundus. Other members of the family were being looked up for a complete report.

Dr. Shumway said the opacity appeared to him to be situated between the nucleus and the posterior pole of the lens, and its discoid shape led him to believe that it represented one of the type of congenital cataracts, which was described originally by Nettleship and Ogilvie in 1906, and has since been spoken of as Nettleship's cataract. It was very similar to the cases reported by Chance before the American Ophthalmological Society in 1907, which he had had an opportunity of studying, and a number of additional cases had been described recently in England. Dr. Shumway had seen two cases in private work, in a mother and son. The boy, aged seven years, was perfectly healthy otherwise, and vision could not be improved above 6-15. In the mother's case the opacity had the same discoid shape, and was situated also between the nucleus and posterior pole, but was very faint, the vision being 6-6 in one eye and 6-5 in the other.

#### **Tuberculosis of the Anterior Segment of the Globe.**

Dr. Zentmayer exhibited a case of *Tuberculosis of the Anterior*

*Segment of Globe* in a girl aged fourteen years. Eight months ago the left eye had been inflamed for a short time. The present affection began in the same eye about four months ago as a circumscribed elevated violaceous patch in the sclerotic above the corneal limbus. The cornea soon became infiltrated, a gray triangular patch pushing its way into the parenchyma from the limbus. Later similar nodes of sclerokeratitis appeared, until at the present time the entire circumference has become involved. The center of the cornea is fairly clear, but there are a few scattered dots of infiltrate in this locality. There is a marked iritis. There are firm synechia and a faint pupillary membrane. The anterior chamber is very shallow. T.—?V.=1-60. The von Pirquet test was positive. There has been both local and general reaction after therapeutic doses of tuberculin. The process has not been arrested by the treatment. The physical examination of the patient is negative. She has had measles, mumps and scarlet fever. Her father died of pulmonary tuberculosis. Her mother is living and well. She has two brothers and two sisters living. None dead.

Dr. Howard F. Hansell stated that the interstitial keratitis of tubercular origin was represented by the case shown by Dr. Zentmayer. In its appearance it differed totally from the interstitial keratitis of inherited or acquired syphilis. Among the patients displaying the classical symptoms of the latter, the history of syphilis was often difficult or impossible to obtain, and frequently the underlying disease was undiscoverable. Dr. Hansell said that at the present time he had two patients under treatment at the Jefferson Hospital, both girls aged about fourteen years, each presenting the common signs of interstitial keratitis, and singularly, each with a tuberculous disease of the bone or joints. In view of the possibility of a tuberculous cause for the keratitis, as demonstrated in Dr. Zentmayer's case, he thought it would be wise to consider, in every case, whether tuberculosis and not syphilis might be responsible.

Dr. Krauss mentioned a case of *Tuberculosis of the Cornea*, which he had under care at the present time in St. Christopher's Hospital, which had resisted all forms of treatment for several months.

Tuberculin caused a local reaction in the eye after each injec-

tion, the inflammation and opacity extending. The general reaction was practically none, as only minute doses were used.

### **Detached Retina.**

Dr. J. B. Turner reported the case of a young man, aged thirty years, whose left eye was enucleated seven years ago owing to a sarcoma of the choroid, and whose right lens was extracted six years ago. Following a fall last August the whole upper and part of the inner half of the retina was detached. The patient was kept in bed for thirteen weeks, and during the last seven weeks the foot of his cot was elevated sixteen inches. A board was placed in the center of the bed to prevent the hips from sinking. He was given potassium iodide, sodium salicylate, and pilocarpin sweats. When in the head depressed position, he complained less of seeing a wave before the eye, and the position did not prove to be irksome. The retina remained in place for six weeks after he left the hospital, and the vision improved from 1-50 to 6-20.

It was hoped that by insisting upon the inclined positions at night a relapse might be prevented.

Dr. Turner stated that a retinal detachment in an apakic eye was most unpromising as to cure. He believed that four to five weeks would probably be long enough to be in the head depressed position to achieve results.

### **Temporal and Bitemporal Visual Field Defects.**

Drs. G. E. de Schweinitz and George Lord de Schweinitz discussed some cases of *Temporal and Bitemporal Visual Field Defects and Their Significance*.

CASE 1. A man, aged thirty-four years, with normal eye-grounds and normal central vision, developed suddenly a large defect in the right temporal field, in the center of which there was a triangular area of preserved white light perception. The field on the opposite side was nearly normal in extent, but contained in the temporal field a large oval scotoma situated midway between the fixing point and the periphery. Searching examination failed to reveal any cause for this visual field defect except that the patient was worn out by a constantly increasing nervous strain depending upon an arduous business life, and that the x-rays showed an enlargement of the sphenoid body, which communicated directly with the posterior ethmoidal cells. Neurologically, no evidence

of disease other than exaggerated knee-jerks and a curious slowness of speech was evident. While under observation the defective temporal field of the right eye remained unchanged, but the scotoma in the left visual field varied, as did also the size of both fields. A permanent visual field defect in the right eye was a small triangular paracentral scotoma up and out from the fixing point.

The essayists discussed the possibility of sphenoid disease as the etiological factor, pituitary body growth, or possibly an unusual manifestation of the so-called neurasthenic field, but decided that while the diagnosis could not be settled, organic lesion was more likely present than the mere manifestations of retinal tire.

CASE II.—A man, aged twenty years, two years prior to examination began to have severe temporal and left vertex headaches, and about nine months before he came observation marked deficiency of vision, which of the left eye was 6-150 and of the right eye 6-22; both discs were atrophic, without evidences of antecedent neuritis, the left being the more affected nerve. There was typical bitemporal hemianopsia, with some contraction of the preserved fields and a crescent-shaped area of preservation of faint white light perception in the center of the dark right temporal field. The x-rays indicated the presence of a growth in the neighborhood of the sella turica, and the essayists discussed the treatment, as well as the visual symptoms of pituitary body disease, and showed illustrations of the trans-sphenoidal route employed by Schloffer in reaching the hypophysis. As yet their patient had not consented to operation.

CASE III. A Hebrew girl, aged fifteen years, two years prior to examination had submitted to the removal of adenoids. Following this operation were frequent attacks of epistaxis, and six months after the adenoidectomy there was a sudden very severe hemorrhage from the nose, and on the following morning the patient had completely lost the vision of the right eye. At the time of her examination, practically two years after this hemorrhage, there was complete atrophy of the right optic disc, without evidences of preceding neuritis, and with no contraction of the retinal vessels. The vision was only a suggestion of light perception at the upper and inner portion of the visual field. The vision of the left eye was normal, but the visual field showed a large defect upon the temporal side, which had occurred only three months prior to examination, and is

said to have appeared suddenly, and at this time there was no epistaxis or other cause for its development. General examinations were negative, sinus disease could not be demonstrated, x-ray examination failed to show any disease in the neighborhood of the sella turcica, and, although such lesion could not be positively excluded, the most likely explanation of the condition appeared to be an atrophy following hemorrhage, such as not infrequently occurs after hemorrhage from the stomach, but which also has followed epistaxis, hemoptysis, urethral and intestinal hemorrhage, and which depends upon a degeneration of the retinal ganglion cells, together with their long processes, which make up the centripetal fibers optic nerve. The reason of the sudden loss of the temporal field of the left eye was not apparent, and there was nothing in the eye ground to account for its origin.

Dr. H. M. Langdon cited the following case histories, in which changes were noted in the temporal fields:

The first patient was an epileptic, aged sixty-five years, who gave a history of infrequent convulsions, loss of memory, and for four days blindness on the left side. The right field revealed a slight concentric contraction for form, but a marked contraction for colors, while in the left eye there was a loss of the temporal with contractions of the nasal field and a reversal of the blue and red fields. A later examination revealed a loss of the upper left quadrant of the right field, while the lower left quadrant of the left eye was partially restored. The field phenomena were regarded as functional, and disappeared under appropriate treatment.

The second case was one of meningitis, and, when first seen, without ocular changes. Cranial operations were resorted to in 1904 and 1908. When seen after the second operation, the vision was 6-9 in each eye, and there was slight bilateral ptosis, paresis of the right superior oblique muscle, with hyperemic discs and over-filled veins. The left field was normal, while the right field was constricted to 40°. Two weeks later there was marked bilateral optic neuritis and a large central scotoma in the defective right field. VOD=3-45, VOS=6-9. The condition was regarded as a descending neuritis due to the meningitis.

### Cyanosis Retinæ.

Dr. T. B. Holloway reported a case of *Cyanosis Retinæ* observed in a child, aged three years, who was under the care of

Dr. Charles Fife. At birth the child appeared healthy, and was the seventh of eight children. There was no history of tuberculosis or syphilis. Cyanosis of the hands and feet was first noted at the age of ten months, and this was subsequently followed by general cyanosis and clubbing of the fingers and toes. The urine revealed a slight trace of albumin. A blood examination gave the following results: Hemoglobin, 120; red cells, 9,020,000; white cells, 9280.

The veins of the lids were dilated, the palpebral conjunctiva purplish or plum-colored. The fundus of each eye was cyanosed, the discs dusky red in color, with an increase in the size and number of the capillaries. The veins and arteries were dilated and tortuous, as well as being dark in color, these changes being much more evident in the veins. No free hemorrhages could be noted. No autopsy could be obtained. Their clinical diagnosis of the cardiac condition was a defect in the interauricular septum.

T. B. HOLLOWAY, M. D., Clerk.

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### WILLS HOSPITAL OPHTHALMIC SOCIETY.

SAMUEL D. RISLEY, M. D., Chairman.

Meeting of January 3, 1910.

Dr. S. D. Risley presented a case of glaucoma in a man who had been operated upon for cataract successfully seventeen years ago. The notes were offered as a preliminary introduction to the complete history which Dr. Risley wishes to give in detail at a later meeting.

Dr. William Zentmayer exhibited a case of congenital atypical pigmentation of the retina in a young man. The pigment was of a brownish-black color and occupied the lower-inner third of the fundus. The spots varied in size from one to several times the width of a retinal vessel, and varied in shape from round to irregularly oval. Many of the dots were arranged in the manner of diplococci. In every other respect the fundus was normal. Vision and fields were normal and there was no nyctalopia. Dr. Zentmayer stated that this was the third case he had seen. One case had been observed again after the lapse of several years and the appearance of the fundus had undergone no change.

Dr. Charles A. Oliver was particularly interested in Dr. Zentmayer's present case which he had had the privilege of studying



personally. In looking over the plates of some of the reported cases, he was struck with the distribution of the pigment which seemed to be mostly marked in the position of the foetal cleft, though the present one not being so.

Dr. William Posey said he has had a case under observation for fifteen years which has remained unchanged. In his case and in certain others the spots seem to be disposed so as to suggest the probability of association with the foetal cleft. In Dr. Zentmayer's case the spots are in the temporal half.

The chairman said he had seen such cases as these, though rarely; they had always been interesting yet so far he had not been able to decide upon the origin of the singular pigmentation.

Dr. F. B. Tiffany, of Kansas City, asked whether there had been anything of note in the family history of this case and others cited. He had observed such markings in certain mutes of consanguineous parentage, in whom there were no distinctive symptoms nor signs of degenerative changes in the retina.

Dr. Zentmayer said that in his case the visual acuity and the light-sense were unaffected. There was no history of consanguinity. In his experience the pigmentary alterations observed in mutes had been accompanied by distinct tissue changes.

Dr. Charles A. Oliver exhibited a case of repetitive reparation of the right internal cul de sac, in which he had reduced a cicatricial esotropia of thirty-five degrees to twenty-two degrees, and had decreased an ectropion of the entire lower lid to its outer half. The already obtained inner cul de sac was deep and apparently permanently well formed, and the eyeball was being rapidly brought into proper relative position. He asked for suggestions as to the best methods for completing the cure.

He showed a case of simple extraction complicated with microbial conjunctivitis which he had carried to a successful issue by the formation of a conjunctival flap and careful cleansing. Corrected vision with the axis of astigmatism curiously at ninety degrees, was normal.

He demonstrated a third case—that of band-like cicatricial symblepharon, which was being rapidly removed by the repeated employment of the Berens' sutures, by his official assistant, Dr. Charles J. Jones, the case being almost well.

Dr. Posey described the Maxwell operation for the plastic repair of contraction of the socket and he exhibited a young farmer whose orbit had been gored by a bull's horn. The contractures had been extensive yet Dr. Posey hoped to obtain a socket capacious enough to retain a glass shell.

Dr. Zentmayer said that he saw a case with Dr. Fisher last year. The operation was performed most skilfully, yet a slight ectropion persisted for six months though the final result was good and Dr. Fisher was pleased with what had been accomplished. He had been careful that the flap should not be too broad. It was a bad case. Dr. Zentmayer was of the opinion that the best results could be obtained by making the incision away from the border, and that the skin flap should not be broad.

Dr. Oliver said he would gauge the flap by the orbital margins.

Dr. Radcliffe prefers the "Wiener operation" as it obviates any ectropion and by it one can make as deep a sac as one needs. It is true the sutures are likely to slough through and leave small scars.

Dr. Posey said he had done the Wiener operation to obtain a socket in which there could be worn a shallow eye. He cut out the suture just before signs of sloughing were seen.

The chairman said he had not done either of these operations. He ventured to cite the case of a nurse who came under his care years ago. He began by treating the inflammatory symptoms and then opened and dissected back the conjunctiva above and below, after which he cut deep into the orbit and thus made a pocket for a ball. Then the conjunctiva and the deeper tissues were sewed over the ball. He saw the lady five years ago, and she had worn the shell with great comfort for years. He would urge carefulness in observing the curves of the tarsal borders and of the ball in incising the conjunctiva, in all such proceedings.

Dr. Posey then showed a case of suspected tuberculosis of the ciliary body in a negro. The conditions seemed most desperate. He had used tuberculin 1-20 mg. in four applications without a rise of temperature. He was anxious because there had not been a diagnostic reaction. Mercury had been given a week and he asked whether he ought to give more tuberculin or not.

In regard to treatment, Dr. Oliver advised the temporary ces-

sation of the tuberculin therapy in order to give opportunity to make a relative study upon the general temperature and the local condition: mercury by innunction to be substituted during the studies.

The chairman advised the withholding of the serum and urged the administration of mercury combined with quinine, stating, that it would be borne in mind, however, that quinine might mask the diagnosis by controlling the rise of temperature.

Dr. Detling read the report of a "Fatal Case of Mania Following Cataract Extraction," for Dr. Emory Hill, the retiring house surgeon. The patient was a woman of seventy-two upon whom Dr. Posey had operated by the combined method the next day after her admission. The operation was clean and without accident, and at the first dressing two days later the eye was quiet and the wound healing. On the fifth day the patient was out of bed with a single bandage. In the afternoon of that day she refused her food because of an hallucination and she began to have a continuous though mild talkative delirium. Very soon there followed marked general enfeeblement with a distinct rise of temperature. On the eighth day after the operation, she was removed to the Philadelphia General Hospital, where she gradually sank and died in eight days. Dr. Hill regarded the chief points of interest in the case to be the late development of the delirium which was not violent; the absence of fright; the development of fever and the depression of the circulation and of the respiration; the uneventful recovery from the surgical procedure; and the fatal termination of the case without remission of the disturbed mental symptoms.

The chairman said that Dr. Hill's report opened up a most serious subject for debate and because of the lateness of the hour he suggested that the discussion be postponed until the February meeting when it should be considered as part of the formal program.

BURTON CHANCE,

Secretary.

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## OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

An ordinary meeting of the Society was held at the Medical Society's rooms, on Thursday, March 19, 1910, Dr. G. A. Berry, President, in the chair.

Mr. J. B. Lawford showed a case of massive exudation in the retina. There was no ascertainable family history of importance; the man was aet. 29, and was incapacitated by the failure of sight. Mr. Dorrell showed a case of oxycephaly, and it was commented upon by Mr. Herbert Fisher, who discussed the possible causation of the condition. Mr. Fisher showed a case of congenital cataract, the patient having cataracts of quite different character—one lamellar and the other discoid—in the two eyes. Mr. A. W. Ormond showed two cases: (1) A case of persistent mydriasis in both eyes, and (2) a case of transient myosis, associated with headache. The last of the two cases caused considerable discussion. Dr. Farquhar Buzzard said the cause, whatever it was, was acting on both sides, and suggested there was some paroxysmal condition connected with the third ventricle. Or there might be a cyst in connection with the choroid plexus, which would at times block the ita, producing for the time being hydrocephalus, probably bilateral in character. The case was also discussed by the President and Mr. Rayner Batten. Mr. Bishop Harman brought forward later reports on a case shown last time as possibly granuloma, now shown to be a papilloma. Mr. Devereux Marshall described for Mr. T. H. Butler, a new folding operating table. Mr. Foster Moore showed a case of subretinal hemorrhage. Mr. Rayner Batten persistent mydriasis following operation for high myopia, and Mr. Cunningham a case of vertical elongation of the cornea in congenital syphilis.

Mr. Malcolm L. Hepburn read a paper on Xerosis of the conjunctiva and night-blindness. He said that the hitherto accepted theory regarding the cause of this complaint, namely torpor of the retina due to general malnutrition, could not be justified, either by the condition of the patients, or by the presence of the ordinary signs of defective circulation in the retina. A more probable explanation of the night-blindness was that certain rays of light acted prejudicially on the visual purple, causing retardation of the normal metabolism, a theory borne out by the occurrence of this complaint during the months from May to September, when the intensity of the rays of light was presumably at its greatest. The relationship between the Xerosis patches and the night-blindness presented many difficulties, and while the connection between the two seemed to be a very close one, a common cause was not easy to find. It was suggested, however, that the same rays of light which influenced the

visual purple acted in some way on the conjunctival mucous glands, inhibiting their secretory function; and in support of this it was found that during the continuance of the Xerosis patches the night-blindness persisted; whereas when the former were removed, the latter disappeared also. The treatment usually adopted varied considerably, since it was found that many remedies produced an amelioration of the symptoms, though the time they took to act, differed according to the special method employed. Some relied on external remedies alone, while others strongly advocated drugs internally, without any local application whatever. Bandaging the eyes for a short time had alone been known to give relief, and whatever treatment might be used must evidently not only modify the action of the special rays of light on the conjunctiva, but also their path through the pupil to the retina, since in no other way could the simultaneous improvement in the two prominent symptoms be explained. Arising out of the discussion of this subject, it appeared that there was some reason for thinking that congenital night-blindness, Xerosis of the conjunctiva and night-blindness, and the night-blindness of malnutrition might be due to a common cause.

Mr. R. R. James read a paper on a contribution to the bacteriology of panophthalmitis. He related the case of a laboring man who was admitted into St. George's Hospital, in November, 1909, with what appeared at first to be an orbital cellulitis following a wound of the upper lid received a couple of days before. There was marked proptosis and extreme chemosis, with haziness of the cornea, but no hypopyon. Incisions were made in the lids, but no pus was found. Patient's general condition, which was extremely bad on admission, began to improve, but a couple of days later the conjunctival sac was found to be lined with a tough membrane. The eye was still proptosed, the cornea was uniformly yellow in color, and gas bubbles and pus were observed issuing from a tiny spot at the upper part. The hole was enlarged, and the contents of the globe scraped out, and the man made a slow but uneventful recovery. The bacteriological report by Dr. Slater showed that swabs from the pus yielded a streptococcus and a large gram-positive, immobile, non-sporing bacillus, closely related to, if not identical with, the bacillus *Aerogenes Capsulatus*. The results of cultivation on milk,

potato, gelatine and broth were given, and also the result of inoculation of a guinea pig. The animal rapidly died, and the post-mortem findings were similar to those described in a previous paper on acute spreading gangrene, by the writer (Mr. James). The paper was discussed by Mr. Mayon and Mr. James replied.

(Discussion on Mr. Hepburn's paper.)

Dr. Levy said cases which he saw showed fundi which were paler than ordinary, and he thought the paleness of the fundi had something to do with the disease. But Mr. Hepburn had not borne that out. However, he though albinos did not, as a rule, show night-blindness, and they saw better in the night than in the day. He agreed that malnutrition had nothing to do with it. He had not seen xerosis alone. Mr. S. Mayon said that some years ago he examined a number of such cases, and found the changes in the epithelium were in the direction of creatinization, due, perhaps, to the fact that the disease occurred during the prevalence of hot dry winds. Mr. Devereux Marshall pointed out that the macula did not contain visual purple, it was not thought to because the visual purple bleached quickly in light. It had also been said that the bat's eye did not contain visual purple: this was wrong, for it certainly contained a photo-chemical substance which acted like visual purple. Mr. Mold, Mr. Johnson Taylor, Mr. Sydney Stephenson and Mr. Harman continued the discussion, and Mr. Hepburn replied.

C. Devereux Marshall, M. D.,

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### CHICAGO OPHTHALMOLOGICAL SOCIETY.

Clinical Meeting of March 21, 1910, Held at the Illinois Charitable  
Eye and Ear Infirmary.

Dr. W. A. FISHER, President, in the Chair.

#### **Shortening of an Ocular Muscle by Tucking.**

Dr. H. W. Woodruff exhibited several patients on whom excellent results had been obtained by an operation which he had performed in more than fifty instances. Dr. Woodruff makes a vertical incision in the conjunctiva only which is dissected from the capsule as far as possible. An opening is made with the straight scissors at the lower border of the tendon near its insertion, and

the strabismus hook passes through this opening and under the tendon. This opening is then enlarged parallel to the lower border of the muscle and a similar incision made along the upper border of the muscle, so that the muscle is exposed as far back as possible. While the conjunctival flap is held out of the way by an assistant, a needle threaded with formalized catgut is passed from below upward as far back from the tendon insertion as possible. This is tied in the manner of Worth, including, however, muscle and capsule only. The needle, which now is under the muscle, is then passed through the tendon at its insertion very close to the sclera, from underneath cut. A similar suture is passed through the upper border of tendon and capsule. When these sutures are tied, a fold is produced in the tendon and capsule at its insertion in the sclera. The sutures should be tied in three knots to prevent loosening. The conjunctival wound is closed with silk sutures and bandage applied. Anesthesia is secured by the instillation of cocain and the subconjunctival injection of cocain and adrenalin.

Dr. Gradle for several years has done an operation similar to Dr. Woodruff's in principle, but technically simpler. He splits the tendon horizontally for a length of 10 to 12 mm. from its insertion towards the canthus. Incising through the conjunctiva without dissection, the sclera is exposed in the wound and the muscle and tendon freed with a hook. A horizontal suture is placed under each longitudinal half of the muscle, one needle bringing it out through the tendon close to the sclera while the rear needle penetrates from within outward, the belly of the muscle with all the tissue covering it. The distance between the needle-exits depends on the intended shortening. The peripheral ends of the two threads are tied together preferably over a miniature aluminum plate with two eyelets. If the two anterior ends of the thread are now knotted also over an aluminum plate the amount of shortening is regulated by the tightening of the loop. The tuck in the muscle spreads out laterally from the wound and is not very conspicuous. The objection of this simple and easy operation is its small effect. The threads have seemed to cut to some extent through the belly of the muscle and the effect is not as great when healing is completed, after seven days, as when the thread is first tied. But the result obtained after the end of the first week has always remained permanent.

Dr. Richard J. Tivnen has seen Dr. Woodruff perform his tucking operation and has also used his method in two cases of his own. Judging from the results obtained it would seem to be a very satisfactory operation. The technic is not more difficult than the Worth procedure and, with Dr. Woodruff's method of local anesthesia, the coöperation of the patient is easily secured in the majority of instances. The "hump" occasioned by the "tuck" is quite prominent at the conclusion of the operation, but it gradually disappears and in no instance has Dr. Tivnen observed it remaining as a permanent disfigurement. As Dr. Woodruff remarks, the only difficulty is to place the sutures far enough back in the muscle. The instrument Dr. Tivnen presented is used by the rhinologist and it occurs to him that it might be so modified as to overcome the difficulty of inserting the posterior sutures to which Dr. Woodruff refers. Dr. Tivnen is having one made to conform to the modifications he has in mind.

### **Recurrent Glioma.**

Dr. W. H. Wilder presented a well-developed, apparently healthy boy of 3 years who was first seen in the dispensary of the Illinois Eye and Ear Infirmary in July, 1908. The pupil of the right eye was moderately dilated and a grayish reflex was seen. Tension was normal. Diagnosis of glioma retine was made and immediate enucleation advised. This was declined and the boy was taken to two other ophthalmic surgeons who also advised removal of the eye. This advice was not followed and the parents had the boy "treated with medicine" for a year, at the end of which time the little patient was again brought to the clinic with a large tumor protruding from the eyeball and from the orbit.

Complete exenteration of the orbit was performed, the bones being denuded of periosteum. Patient was then treated for several months with X-rays, and the orbit filled in nicely with apparently healthy granulation tissue. Two months ago signs of recurrence appeared, and at present a firm mass pushes the eyelids forward. Boy is bright and in good health otherwise, and gives no evidence of brain involvement. The mass will be again removed and the bones scraped, and the X-ray treatment continued.

### **Rapidly Growing Round Celled Sarcoma of Orbit.**

Dr. Wilder also exhibited a girl 3 years of age, well-developed



and nourished—was first seen in the dispensary of the Infirmary December 15, 1909. The right eye was reddened, and protruded to a slight degree, because of some swelling of the orbit. Pupil mobile and reacted to light. Movements of eyeball somewhat restricted. The history was that the eye was normal up to about two weeks before, at which time, when at play, her little sister had stuck some scissors in the eye, causing a slight wound that did not bleed much. The next day the eye began to swell.

Ophthalmoscopic examination showed that the fundus was normal. No wound could be seen in the sclera or conjunctiva. The swelling increased and the patient was taken into the hospital December 29, 1909. The child began to have increased temperature which, at one time, reach 101.6.

The swelling increased rapidly so that in a few days the lids could not be closed and the cornea sloughed.

On January 11, 1910, or six weeks after the original injury, the right orbit was completely exenterated, the eyelids being left. The child recovered nicely and is still in good health. Histologic examination of the growth shows a large round celled sarcoma.

### **Bilateral Exophthalmus.**

Dr. Wilder showed the case of bilateral exophthalmus in a man 45 years that had been exhibited at the previous meeting. The exophthalmus was of 5 years' duration and was marked. The lids could still be closed, but the lower conjunctival fornix protruded. Skiagrams showed no bony growth.

Ophthalmoscopic examination revealed slightly congested retinal veins and a beginning optic neuritis in each eye. R. V. 20/120 L. V. 20/10. March 2, 1910, a Kroenlein operation was done in the left side and a large tumor mass was removed from the left orbit that did not involve the muscle cone. Prompt recovery from the operation was marred by a furious facial erysipelas that developed the day after, but with the subsidence of this, it was noted that the swelling of the right orbit was very much less than it had been. As a result of the operation the condition of the left is improved. The optic neuritis seems to be subsiding and vision of that eye has risen to 20/50. The growth is being prepared for examination and its nature has not yet been determined.

Dr. C. A. Leenheer: I am glad to see that Dr. Wilder did the Kroenlein operation instead of the Halstead of which he spoke at the last meeting. At this meeting I asked Dr. Wilder why he did not advise a Kroenlein. His answer was very much against the Kroenlein.

My entrance thesis presented and read before this society, reported an orbital tumor removed by the Kroenlein method. The operation was not performed by me but by Professor W. Schroeder of Northwestern University Medical School and he had no trouble in separating his osteo-plastic flap and exploring all of the orbital cavity. The report of the laboratory was an Hemangio-Endothelioma. I would like to know the laboratory findings in Dr. Wilder's case.

### **Tuberculous Ulcer of the Conjunctiva.**

E. V. L. Brown: Mrs. J., age 32, first noticed an ulcer on the left lower lid conjunctiva eleven weeks before I saw her and stated that the lesion had changed little in that time. I found the lower left lid border thickened and the inner half, especially, diffusely red and tumified to the median line. A saucer-shaped ulcer involving the back half of the free lid border, meibomian gland ducts and adjacent conjunctiva lies 5 mm. temporal to the puncture; it is 3 mm. wide, 1 mm. deep, has a yellow white quite smooth floor, and no undermined or indurated border; a more moist and superficial extension is seen at the temporal edge. The lid conjunctiva lateral to the ulcer presents 10-15 round or oval elevated follicle-like nodes in the subepithelial layer; they are distinctly yellowish in color and often grouped in packets of 3-4 each. The intervening conjunctiva is considerably reddened and injected. The preauricular gland is swollen. Smears show numerous typical and atypical tubercle bacilli (Prof. Harris, University of Chicago); the guinea-pig into whose anterior chamber a piece of the excised tissue was placed was eaten up by rats about two weeks after the inoculation and before any iris tuberculosis had developed; a diagnostic injection of 1 mg. of tuberculin gave a positive general and local reaction; no evidences of tuberculosis in other parts of the body could be found by Dr. Woodyatt.

The patient is now in her seventh week of a course of "Bacillen Emulsion" subcutaneous injections according to the

revised recommendations of Hippel, recently published by his assistant, David, and the ulcer is smaller but the follicles unchanged.

### **Bilateral Primary Inflammatory Glaucoma Tension Relieved by Cyclodialysis.**

E. V. L. Brown: P. V., age 59. Vision has gradually failed in each eye the past five or six years. One finds total marginal glaucomatous excavations both discs. R. tension is at the upper physiological limit, L. tension  $+1$ ; the Schiotz tonometer reads R. 54 mm., L. 66 mm. Cyclodialysis was done on the R. eye twenty-eight days ago and upon the L. eye ten days ago and reduced tension to a point normal, below, to the touch in each eye and to 19 mm. by the tonometer in the R. eye. The left tonometer tension has not yet been taken.

### **Glaucomatous Cupping of Both Discs with Amaurosis Possibly from Methyl Alcohol.**

E. V. L. Brown: F. P., aged 59. Three years ago patient awoke one afternoon to find himself completely blind. The day before he had spilled a large quantity of wood alcohol down his leg, filling his shoe. He allowed his clothes to dry without changing them, but soon became dizzy and went home. He returned to work the next day but again had to leave for home and go to bed on account of dizziness. Vision gradually improved so that four months later he considered returning to work, but after seven months his vision had become as bad as it is now and has remained so. He has been under my observation the past year only.

One finds vision in each eye reduced to light perception and light from any direction projected into the temporal field. The pupils are about 6 mm. in size and almost fixed to light.

The discs are blue white and sharply outlined and surrounded by a halo of glaucomatous choroidal atrophy; the lamina cribrosa shows over a large portion of floor and the vessels are of good caliber.

A complete and ampulliform excavation of the nasal halves of each disc is present. The difference in level between the floor and edge of the disc is  $3\frac{1}{2}$  D. on the right side and ? D. on the left. The scleral rings overhang the floor in more than one-half

the circumference on each disc. The large vessels are all displaced to the nasal half and disappear beneath the undermined edge of the scleral ring to reappear on its overhanging anterior surface. In the temporal halves the surfaces slope gradually up to the edge of the disc and the scleral ring is nowhere undermined in these halves.

The tension has been studied with especial care. To the touch it has always seemed to be at the lowest border of the physiological limit. For seventy-five consecutive days it was studied with the Schiotz tonometer and was never higher than  $14\frac{1}{2}$  mm., although it has been as low as  $8\frac{1}{2}$  mm. Two weights were always used. We have then a so-called "glaucomatous" excavation of the nasal halves and an "atrophic" excavation of the temporal halves of each disc without demonstrable increase of tension.

Heinrich Mueller first held that the glaucomatous cup is caused by increased intraocular pressure. In cases of simple glaucoma it has been contended that increased pressure would be found if carefully sought for; but in this case I have been unable to find any increase for a period of  $2\frac{1}{2}$  months in the third year of the disease. Schnabel believed that the increased pressure did not cause the cup and that it was due to a cavernous or lacunar atrophy of the nerve substance in its intrascleral portion with subsequent fusion of the tiny cavernæ into one big cavern. Schnaudigl, Schmidt-Rimpler and Elschmig have reported the same type of atrophy in glaucoma. Yet the same cavernæ have been found in myopia by Axenfeld, Polatti, and Stock. Furthermore the cup has been seen to disappear when the increased tension was relieved (and even to return again with a second increase of tension) by Axenfeld, Czermak, Sachs, and indeed by Schnabel himself. Schreier reports a case of lacunar atrophy in a child dying with multiple sclerosis of the brain and cord with a typical total shallow saucer-shaped excavation of the disc.

What effect the wood alcohol may have had in the production of the glaucomatous excavation in this case I am unable to state. The history is typical of such a poisoning, but the retrobulbar neuritis and simple glaucoma may have been merely coincident. I can find no cases of ampulliform excavation of the disc involving either the whole of the circumference or a portion of the disc in the literature of toxic amblyopia.

**A Case of Argyrosis.**

Dr. M. H. Lebensohn presented Mrs. D. M., Russian, 46 years old. Ten years ago, while living in Russia, patient had small-pox. For the ocular involvement at that time she was given an eye-wash which she used 3-4 times daily for two months. She claims not to have used any eye medicine since. Dr. Lebensohn first saw her three and a half years ago. The entire conjunctiva including the palpebral portion with the exception of a small triangular space at the outer canthi was coal black. Vision was fingers at six feet in both eyes due to corneal opacities covering entire cornea. Under the use of powdered dionin, vision has greatly improved to 20/120 in each eye but the discoloration is almost marked as before. This patient was exhibited about two years ago by Dr. Nance before this society.

**Rupture of the Sclera.**

Dr. Dwight C. Orcutt presented a man, aged 44, who, on January 3, 1910, fell, striking his left eye on chair post. He suffered extreme pain two weeks with practically no treatment. Thirteen days later vision equalled shadows. Tension I. Rupture of sclera in the upper nasal quadrant 2 mm. from cornea—scleral margin. Prolapse of choroid and ciliary-body protruding 2 mm. and 4 mm. in diameter in about the size of a split pea. Four days later, wound was ruptured with mattress stitch bringing conjunctival flap over all. Owing to adhesions it was necessary to remove part of prolapse. Tension persisted almost uninterrupted until stitches were removed. From that time normal tension steadily improved until present time when, with correction of refractive error, patient has 6-9 vision and reads Jaeger 1.

**Sympathetic Ophthalmitis Following a Cataract Operation.**

Dr. Willis O. Nance exhibited a man of 31 who entered the Infirmary six months ago with a well-defined sympathetic inflammation of the right eye. He gave a history of having a cataract extracted from the left eye four months previously. This eye was absolutely blind and was enucleated, patient was put to bed in a darkened room and from 130 to 160 grains of sodium salicylate were administered daily, for several weeks. Within six weeks the eye was quiet. At the present time there is an apparent *occlusio pupillae*, yet patient is able to count fingers at five feet. This is

the first case of sympathetic ophthalmitis following cataract operation that Dr. Nance has observed.

### **Sympathetic Ophthalmitis-Recovery With Useful Vision.**

Dr. Nance also presented a man, 29 years old, who developed a sympathetic ophthalmitis last October, eleven years after a perforating ciliary wound. When patient entered hospital five months ago there was every typical symptom of sympathetic ophthalmitis. Enucleation of the "exciting" eye had been advised. Vision of the injured eye was 3-200 and of the other was 6-200. Under atropin, confinement in bed in a dark room and mercurial inunctions and later massive doses of sodium salicylate both eyes rapidly improved in five weeks so that vision was 20-100 and 20-30 respectively.

### **Penetrating Injury of the Eye With Some Unusual Complications.**

Dr. Richard J. Tivnen: Edward D., aged 14, two and a half years ago, while engaged in cutting string, knife slipped, striking right eye. Patient states that eye was never reddened, inflamed, painful or tender; only discomfort experienced was inability to see. Returned to school three months after injury; nine months later compelled to leave school on account of "blurring of vision, black dots and cobwebs," affecting left eye. Patient first presented himself, at this time for examination fifteen months after injury. There were no evidences of irritation or inflammatory process. Vision equalled perception and projection of light; globe presents a linear corneal cicatrix, one-eighth mm. in length, situated slightly above pupillary area and extending from outer limbus horizontally inward across the cornea. The iris is adherent throughout whole extent of cicatrix and its pupillary margin drawn to upper temporal quadrant; posterior synechia, pupillary reflexes, tension and palpation, negative; lens cataractous; physical examination, Von Pirquet tubercular reaction, urinalysis, negative. *Left eye.* Vision 20/120; no external evidences of an inflammatory process. Fundus, a "brick dust" exudate in vitreous obscuring disc; slightly below macular region a choroidal patch, crescentic in form, one-half diameter of disc; densely pigmented at its upper part. Complete rest of eyes, saturated solution of potassium iodid increasing doses and inunction of hydrargyri; patient improved and returned to

school. Continued in school for five months when "spots and blurring" returned and compelled again to forego studies. Previous treatment resumed with the addition of pilocarpine sweats. Vitreous is clearing and patient is gradually less distressed with "spots and blurring" of sight.

The nature of the lesion in the uninjured eye, is the perplexing question, in this case, whether it be a sympathetic process, consequent upon injury or a periodic lighting up of an old choroiditis.

#### DISCUSSION.

Dr. Cassius D. Westcott: Dr. Tivnen's case recalls a report made some years ago by Dr. Ayres of Cincinnati of some similar cases in which he asked the question: Is there a pseudo sympathetic ophthalmia? Without having an opportunity to make further study of these eyes, I should regard this as a case of sympathetic ophthalmia and enucleate the blind eye.

#### Detachment of the Retina.

Dr. Emily H. Selby presented Mrs. M., aged 45, who had a detachment of the retina involving the inferior quadrant.

The case was of especial interest from the fact of its sudden occurrence. The patient suffered a severe headache and after a brief period of sleep, discovered that she could not see well with the right eye. When she consulted Dr. Selby, vision equalled 18-200. Dr. Selby questioned the advisability of operative procedure.

WILLIS O. NANCE, Secretary.

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Dr. W. T. Shoemaker of Philadelphia: Defective mentality is here considered only as applied to children who are deficient or backward, but withal tractable, and offering promise of betterment or standardization. In the examination of the eyes of such children nothing is seen which is not found often enough in children of normal mentality, nor are the deviations from the normal of a strikingly high degree; they are, however, more constant. The relationship between ocular defects and defective mentality is not one of cause and effect; both mental and ocular defections are equally related to some other common cause. The observed phenom-

ena belong as a rule to that class designated by Walton as deviations, in contradistinction to the so-called stigmata of degeneracy, and children so affected are better classed as deviate or deviates than as degenerates. The ocular deviations may be noted in any part of the ocular apparatus. Errors of refraction have received more attention and more condemnation than all other eye defects combined. Backward children do not as a rule suffer from eye-strain. Ametropia is not a cause of mental deficiency in children, but is a serious obstacle in the way of mental development. In dealing with defective children, all obstacles must first be removed, and it must be remembered that all knowledge of the outside world must reach a child through the special senses. There should be secured to the child the best possible vision with the least possible effort. Parents, guardians and teachers should be instructed in the outward signs of backwardness, and should search for peripheral irritations and obstructions, particularly for those connected with the organs of special sense.—(*Jour. A. M. A.*)

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### REFRACTING BY THE FAMILY PHYSICIAN.

The following resolutions, on motion of Dr. Don M. Campbell, professor of ophthalmology, Detroit Medical College, were unanimously adopted by the Detroit Ophthalmological Club:

Whereas, family physician refracting promotes the cooperation of family physician and ophthalmologist; provides physicians adequate for the people's refractive needs; enriches ophthalmology and ophthalmologists, general medicine and family doctor, strengthens medical organization and solves the optician problem.

Resolved, that the Detroit Ophthalmological Club endorses the action of the Section on Ophthalmology of the American Medical Association in promoting "family physician refracting;" the action of the Michigan State Medical Society in seeking to qualify its members to meet the people's refractive needs; the action of the Kentucky State Medical Society endorsing the Michigan idea of family physician refracting; the action of the medical colleges in substituting "family physician ophthalmology" for "specialist ophthalmology," and the action of the state registration boards in Michigan, Vermont, Nebraska and Utah in requiring a "working knowledge of simple refracting."

Resolved, that the Detroit Ophthalmic Club urge other state boards of registration to require (1) for license, "family physician refracting," and (2) for the right to practice ophthalmology "A Comprehensive Laboratory and Clinical Study" after securing a license.

Resolved, that the Detroit Ophthalmic Club encourage family physicians to qualify for intelligent cooperation with ophthalmologists by equipping themselves for simple refracting.



## Notes and News.

Personals and items of interest should be sent to Dr. Frank Brawley, 72 Madison street, Chicago.

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Dr. M. Uribe y Troncoso of Mexico City, Mexico, has been recently visiting Philadelphia, where he was the guest of Dr. Charles A. Oliver.

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The Maryland Legislature has passed an optometry bill exempting Baltimore and thirteen counties.

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Drs. Frederick T. Rogers and Geo. Van Benschoten have been appointed ophthalmologists on the staff of the City Hospital of Providence, R. I.

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The minister of public instruction of Paris, France, recently approved a bill for the obligatory medical inspection of schools.

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Dr. George H. Price of Nashville, Tenn., was elected secretary-editor of the Tennessee State Medical Association at the Memphis meeting, April 12-14.

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Dr. John V. Spring was elected to the staff of the San Antonio (Texas) Free Dispensary and Hospital Association in the eye, ear, nose and throat department.

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Through the efforts of Drs. Louis Ostrom and Wm. H. Luedling of Rock Island, Ills., a medical library has been established in that city and will be located at Augustana College.

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The thirty-second annual report of the Presbyterian Eye, Ear and Throat Charity Hospital of Baltimore, Md., shows that 842 hospital patients and 10,539 out patients were treated in 1909.

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Dr. Wm. Campbell Posey of Philadelphia was treasurer of the committee which managed the testimonial dinner to Dr. James Tyson, given at the Bellevue-Stratford on May 5.

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The governor of Maryland has vetoed the optometry bill which aimed to create a special class of optometrists with its own licenses and examining board.

Cases of blindness and death from wood alcohol are being more frequently recognized in New York City. The Department of Health has started a campaign against those selling wood alcohol, and in fifteen samples taken from saloons, three showed wood alcohol.

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State Health Commissioner Dixon of Pennsylvania is inaugurating a state-wide medical inspection of schools. In three counties 12,255 children have been examined; 1,929 having been found with defective vision.

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The Norfolk (Va.) City Council Finance Committee are considering a tax on professional men of all classes, oculists being included. \$10.00 is to be charged those who have practiced less than five years; over five years, \$25.00; 1.4 per cent of the gross receipts over \$1,000 being added.

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A recent investigation of hereditary eye disease by Crzelltizer tends to show that eye diseases, especially high myopia, are inherited most frequently by the first-born child. The mother most frequently transmits myopia and female children are more liable to inherit myopia than males. Other hereditary diseases are more likely to be inherited by males.

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Prof. C. H. Benjamin, dean of the School of Engineering of Purdue university, in an address before the Western Railway Club in the Auditorium Hotel in Chicago, said that electric headlights on locomotives are dangerous. He stated that recent tests demonstrated the fact that signals were obscured or given a false color value by the excessively bright light of the electric headlight. Where two trains were approaching each other the headlights obscured all intervening signals.

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Dr. D. W. Greene of Dayton, Ohio, who recently returned from India, where he had the opportunity of studying Major Smith's technic in the intracapsular cataract extraction at first hand, gave an address on this subject at the April meeting of the Chicago Ophthalmological Society. While in Chicago Dr. Greene demonstrated the intracapsular extraction upon eight cases, which had been provided by Drs. Fisher, Nance, Dodd, Wilder and Hawley.

Dr. Millette, who is associated with Dr. Greene on the staff of St. Elizabeth's Hospital, Dayton, Ohio, assisted at the operations.

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Open air school rooms are being established in New York, chiefly in the older buildings and open windows are becoming the rule. The new school buildings are heated and ventilated by the so-called Plenum system which regulates the heat by means of thermostats. When the heat reaches  $72^{\circ}$  F. it is automatically shut off, and when the temperature drops to  $68^{\circ}$  F. it is turned on in the same manner. Fresh air is constantly pumped in from registers at the top of the room and the foul air is drawn out below, giving a constant stream of fresh air.

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The committee entrusted with the preparation of the works to be laid before the "International Congress for the Blind," which will be held in Egypt early next year has been finally selected and is composed of H. E. H. Ruchdi Pasha as president, T. E. Abdel Khalik Pasha Sarwat and A. Shafik Pasha, vice-presidents; Dr. Milton, treasurer; Dr. Commonos Pasha, director of the Cairo reception board, and Dr. Ruffer, director of the Alexandria reception board; Mohd. Elwi Pasha, first secretary; Dr. Campos, second secretary; Dr. Saad Bey Sameh, Morcos Bey Samica, Ahmed Bey Zeki, Aly Pasha Sharawi, Aziz Bey Kabil, etc., members. The congress will be held in Cairo in February, 1911, under the patronage of H. H. the Khedive.

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Dr. A. R. Baker of Cleveland, Ohio, at the meeting of the Association of American Medical Colleges held in Baltimore, March 21, advocated the teaching of refraction in medical schools as a remedy for the optometrist evil. He advised teaching the anatomy, histology and embryology of the eye to freshmen, physiologic optics to the sophomores; refraction, retinoscopy and ophthalmoscopy to the juniors and practical work to the seniors. Dr. Leartus Connor of Detroit also expressed himself as in favor of teaching the refraction work to students and general practitioners. The complicated cases only need be referred to an ophthalmologist.

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The following label has been recommended to the Board of Education of New York City by the Association of Women Principals of the Public Schools of New York as a means of checking

the increase in ocular defects which has been noted in the higher grades of the schools:

Your eyes are worth more to you than any book.

Your safety and your success in life depends on your eyes; therefore take care of them.

Always hold your head up when you read.

Hold your book fourteen inches from your face.

Be sure that the light is clear and good.

Never read in a bad light.

Never read with the sun shining directly on the book.

Never face the light in reading.

Let the light come from behind or over your left shoulder.

Avoid books or paper printed indistinctly or in small type.

Rest your eyes by looking away from the book every few minutes.

Cleanse your eyes night and morning with pure water.

The letter was signed by Katherine D. Blake, chairman of the committee on children's welfare; Margaret Knox, Mary F. Maguire, Ellen M. Phillips, Alida S. Williams, Mary A. Curtis, ex-officio; and by the following members of the advisory board of oculists: Charles Steadman Bull, Peter A. Callan, A. Edward Davis, Alexander Duane, W. E. Lambert, Thomas R. Pooley, Edgar S. Thomson, Frank Van Fleet, John E. Weeks, David Webster.

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The meeting of the Ophthalmologische Gesellschaft, of Heidelberg, for the year 1910, will be held on the 4th, 5th and 6th of August. The program is as follows:

Wednesday, August 3, at 6:00 p. m., meeting at the home of Prof. Leber; 8:00 p. m., informal gathering in the Stadtgarten.

Thursday, August 4, 9:00 a. m., meeting in the Stadthalle; 2:30 p. m., demonstration meeting in the Stadthalle; 6:00 p. m., banquet in the Stadthalle.

Friday, August 5, 9:00 a. m., meeting in the Stadthalle; 12:00 m., assembly of the members; 3:00 p. m., meeting in the Stadthalle; 4:30 p. m., various amusements.

Saturday, August 6, 9:00 a. m., meeting in the Stadthalle.

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Papers and demonstrations with their titles should be sent to the secretary between the 1st of May and the 30th of June. It will not be possible, according to the rules of the society, to place

any papers on the program which arrive later than the above dates. No articles will be received whose contents have previously been published elsewhere. The manuscript of the papers must be handed to the secretary ready for printing before the close of the session. Prof. A. Wagenmann, Jena, secretary.

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### **SPIRILLA IN TRAUMATIC IRIDOCYCLITIS.**

Dr. H. S. Gradle reports (*Klin. Monatsbl. f. Aug.*, March, 1910) finding a spirillum in the ciliary body in three cases of infection following eye injuries. The spirillum, 8 to 10 microns in length and very scant in number, could be observed alive by means of dark field illumination or be shown by India ink staining or by the Levaditi silver stain of the hardened material. It could neither be cultivated nor induced to grow in the rabbit's eye. It was found in three successive cases, but could not be seen in six others. It is not present in the normal conjunctival sac.

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### **ECONOMIC VALUE OF REFRACTION BY FAMILY PHYSICIANS.**

Dr. Leartus Connor, of Detroit, in a paper on the "Economic Value of Refraction by Family Physicians," read before the Association of American Medical Colleges, March 22, says: "Family physicians as a class lack a working knowledge of simple refraction. Recognizing the value of the possession of such knowledge, a number of state boards are now requiring as a prerequisite for licensure a practical test in refraction. At present very little of this work is being done by the family physician because of his inability, and yet we are all agreed that the income of the family doctor would be increased very considerably if he were able to do refraction work. It would form a point of contact with the specialists. The simple cases would be taken care of by the family doctor; the complicated ones by the ophthalmologist. There would be no need for opticians and optometrists. The interests of the patient would be concerned, the relationship of the physician to the patient would be strengthened, and in every way conditions would improve. Hence, if the study of refraction enables the family physician to place more correct lenses before the eyes of his patrons, there is an increased economic value to be credited to ophthalmology. There is no more reason for sending every refractive case to a specialist than for sending every obstetric, surgical or nervous case to a specialist."

# CHICAGO EYE CLINICS.

## NOTES AND NEWS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Patillo (P.-G.) J. F. Burkholder (E. E. N. T.)	G. W. Mahoney (Pol.) Geo. F. Suker (P.-G.) Oliver Tydings (E. E. N. T.) C. H. Francis (Pol.)	E. J. Brown (E. E. N. T.)	G. W. Mahoney (Pol.) Richard S. Patillo (P.-G.) J. F. Burkholder (E. E. N. T.)	Richard S. Patillo (P.-G.) Oliver Tydings (E. E. N. T.)	G. W. Mahoney (Pol.) E. J. Brown (E. E. N. T.) C. H. Francis (Pol.)
10 A.M.	L. J. Hughes (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	E. J. Brown (E. E. N. T.)	L. J. Hughes (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)
	Brown Tussy, N.W.U. Every day, 10-12 A.M.					
11 A.M.	H. W. Woodruff (E. N. T.)	A. G. Wipern (E.E.N.T.)	J. R. Hoffmann (E. E. N. T.)	A. G. Wipern (E.E.N.T.)	H. W. Woodruff (E. E. N. T.)	A. G. Wipern (E.E.N.T.)
1 P.M.		Willis O. Nance (C.C.S.)		Willis O. Nance (C.C.S.)		Willis O. Nance (C.C.S.)
2 P.M.	E. V. L. Brown (Inf.) E. J. Gardner (E.E.N.T.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) N. A. Phillips (Inf.) F. A. Phillips (Inf.) J. B. Loring (Inf.) Wm. H. Wilder (Rush) H. B. Williams (Inf.) M. H. Lebensohn (P.&S.) S. L. McCreight (C.C.S.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) Thos. Faith (E.E.N.T.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) F. A. Phillips (Inf.) H. B. Williams (Inf.) M. H. Lebensohn (P.&S.) S. L. McCreight (C.C.S.)	E. V. L. Brown (Inf.) W. A. Fisher (E.E.N.T.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) H. W. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) E. K. Findlay (Inf.) M. H. Worthington (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) Thos. Faith (E.E.N.T.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) E. J. Gardner (E.E.N.T.) Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruff (St. Luke's) J. B. Loring (Inf.) D. A. Payne (Ills. Med.) F. A. Phillips (Inf.) *Wm. H. Wilder (Inf.) H. B. Williams (Inf.) Francis Lane (Rush) M. H. Lebensohn (P.&S.) S. L. McCreight (C.C.S.)	E. V. L. Brown (Inf.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) Wm. H. Wilder (Rush) H. W. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) *Oscar Dodd (Inf.) Thos. Faith (E. E. N. T.) M. H. Worthington (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) W. A. Fisher (E.E.N.T.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) D. A. Payne (Ills. Med.) F. A. Phillips (Inf.) *Wm. H. Wilder (Inf.) M. H. Lebensohn (P.&S.) S. L. McCreight (C.C.S.)
3 P.M.	W. Allen Barr (C.C.S.) *Wm. E. Gamble (P.&S.)	H. H. Brown (Ills. Med.)	*I. E. Harper (P. & S.) W. Allen Barr (C.C.S.) *Wm. E. Gamble (P. & S.)		W. Allen Barr (C.C.S.)	Geo. F. Suker (P.-G.)
4 P.M.	W. F. Coleman (P.-G.)	C. W. Hawley (P.-G.)	G. F. Suker (P.-G.)	C. W. Hawley (P.-G.)	W. F. Coleman (P.-G.) (Brown Pusey County)	

\*Special operative eye clinics.

### ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 819 W. Harrison Street.	County: Cook County Hospital, W. Harrison and Honor Streets.	Pol.: Chicago Policlinic and Hospi- tal, 174 E. Chicago Avenue.	Rush: Rush Medical College, W. Harrison and Wood Streets.
E. E. N. T.: Chicago Eye, Ear, Nose and Throat College, Washington Franklin Streets. Clinics all day.	Ills. Med.: Illinois Medical College, 182 Washington Blvd.	P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.	St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.
	Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.	N. W. U.: Northwestern University, 2431 Dearborn Street.	

# THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS  
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## THE IMPORTANCE OF PROMPT X-RAY EXAMINATION IN CASES OF PENETRATING WOUNDS OF THE EYEBALL WHERE THE FOREIGN BODY CAN NEITHER BE SEEN NOR ACCOUNTED FOR.\*

ROBERT L. RANDOLPH, M. D.,  
BALTIMORE.

I think the truth of the statement embodied in the title of this paper is plain and no doubt some of us have passed through one or more experiences in which there was regret that such an examination was not made where the foreign body could neither be seen nor accounted for. When I say seen I mean those cases in which we fail to see the foreign body in the anterior chamber, iris, floor of the vitreous body or retina. By accounted for I mean those cases in which the foreign body is much too big to have entered the eyeball and have found lodgment in it, and consequently must have dropped to the ground after the accident or blow. In the first class we find cases in which the minute particle or iron or brass is imbedded in the ciliary region far away from detection by means of the ophthalmoscope or in which it has made its way through the anterior structures of the eye and vitreous body and lies deeply imbedded in the retina. In these cases the cloudiness of the vitreous, slight though it be, makes it often impossible to detect the situation of the foreign body, and often the reaction is so slight that it is hard to conceive of a foreign body having found lodgment within the eye. I have seen more than one case of injured eye in which the vision was 20/20ths and in which it afterward developed that a small foreign body had lodged in some out of the way place in the eyeball. In these cases immediately after the injury the eye shows very little redness except at the point

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\*Read at the Annual Meeting of the Association of Baltimore & Ohio Railway Surgeons, St. Louis, June 6, 1910.

of entrance and when the particle of steel is minute the conjunctiva will often fall over and cover up the wound in the sclera and we will be unable to find the point of entrance and are deceived into thinking that the wound involves only the conjunctiva. It is just these cases which demand prompt x-ray examination. The good vision which is present at the time of the injury and which may persist for two or more days hurls our fears and before we are aware of its vision will have dropped to what is practically blindness and we will have on our hands a condition in which the prognosis is absolutely bad. The inflammation is due, of course, to bacteria which are either carried into the eye by the foreign body or have passed in through the wound later and until they have had time to multiply in sufficient numbers the signs and symptoms of inflammation are absent. The following case is illustrative: A man of forty-eight consulted me some months ago on a Sunday evening. He said he had been struck in the eye late Saturday evening. He was suffering a little pain and there was a slight blush generally distributed over the region of the internal rectus. His vision was unimpaired. There was no discoverable wound in the conjunctiva and ophthalmoscopic examination was negative. He felt quite sure that nothing had entered the eye. I was misled by his statement that he had seen the foreign body after his injury. A dilated pupil showed a clear vitreous and normal eyeground. He was told to use cold applications and to return the next day. This he did and he reported himself at the second visit to be decidedly better. Two days after this he returned with the statement that he had passed a miserable night and suffered intensely. There was decided pericorneal redness and his vision was less than 20/40ths. Ophthalmoscopic examination showed a cloudy vitreous. The following day he returned with the report that he had slept none the previous night. This, then, was the Wednesday after his accident and three days after I first saw him. He was subjected that afternoon to an x-ray examination by Dr. Baetjer whose examination showed two very small foreign bodies not larger than the head of a small pin, one perhaps not so large, imbedded in the ciliary body about 2mm apart and on the nasal side of the eyeball. The pieces were so minute as to have caused practically no reaction at first though imbedded in the most delicate part of the eye. It is doubtful whether the eye could have been saved even



if the x-ray examination had been made promptly at the time of the injury, but the chances would have been greater no doubt had this been done and the magnet used. It should be said, however, in this connection that cases reported by others in which the foreign body was in this situation leads me to think that the injury is apt to be fatal and especially when, as in this case, there are two foreign bodies present. The lesson taught by a case like this seems clear. Notwithstanding the fact that the man had good vision and the absence of any discoverable wound of entrance in the conjunctiva further than the redness over the insertion of the internal rectus, this last condition would have warranted an x-ray examination, namely the localized conjunctival redness and the failure to account satisfactorily for the foreign body either by direct examination or from the patient's own account of himself. He felt sure, he said, that a clipping had struck him. No doubt many unnecessary examinations would be made if this were our rule in dealing with cases which come to us with such a history, for it is clear that we often see cases which, externally at least, resemble this one and which turn out to be nothing more than trifling lesions of the conjunctiva just as I regarded this one. Every means, however, should be employed to exclude foreign body within the eye and that promptly, for the sooner the magnet is brought to bear upon such a case where the x-ray findings are positive the better. Justice to one's self demands that such an examination be made even at no inconsiderable expense for nowadays when many employes of big corporations are constantly on the lookout to take advantage of every opportunity to get satisfaction for apparently the slightest neglect of his physical well-being by the company's surgeons no scruples on the score of expense should be entertained for a moment. Men know that we have at our disposal means by which it can be learned at once whether the eye contains a piece of steel and on general principles they know that the sooner the piece of steel is removed the better. Some months ago a man came to me from a remote point on one of our lines with the report that one of his eyes had been giving him a great deal of pain from time to time. There was some pericorneal redness and the vision was limited to the ability to count fingers. He had seen an oculist immediately after his accident and had been assured that the eye contained no foreign body but that his sight had been irreparably injured. He

said he never saw the piece of steel after the blow but he thought it was a small piece. There was a very short cut on the temporal side of the cornea and the vitreous was a little hazy. Ophthalmoscopic examination showed small detachment of the retina below and to the temporal side. I had an x-ray examination made and a foreign body the size of the head of a match was found imbedded in the choroid not far from the macular region. I made an incision in the sclera as near as possible to the body and removed it with the magnet, but the eye had been so seriously damaged that I concluded three weeks later to enucleate it as the tension was decidedly low. Now if an x-ray amination had been promptly made in this case for no other reason than that the foreign body could neither be seen nor accounted for it might have been removed and the surgeon have run no risk of getting into trouble.

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### TRANSIENT COMPLETE OPACITY OF THE CORNEA FOLLOWING THE USE OF OBSTETRICAL FORCEPS.\*

BY JOHN GREEN, JR., M. D.,

ST. LOUIS, MO.

Obstetrical injuries of the eye have, in recent years, engaged the attention of a number of obstetricians and oculists. We are indebted to Bruno Wolff<sup>(1)</sup> for the most elaborate exposition of the subject, his paper gaining special value from containing a synopsis of all cases reported up to 1905.

In a recent paper<sup>(2)</sup> I have given an outline of the types of injuries, which have been described by various authors. These include, in the order of their frequency: Injuries to the cornea, fracture of the frontal bone and orbital roof, exophthalmus, subconjunctival extravasations, paralysis of the ocular muscles, hemorrhages into the anterior chamber, optic atrophy, injuries of the lids, crushing of the globe, avulsion of the globe. Of the rarer injuries, of which only one or two instances have been reported, may be mentioned deep intraocular hemorrhage, abscess of the orbit, ocular motor palsy, traumatic cataract, infantile glaucoma, iridodialysis, fracture of the lachrymal bone, tear of the cornea and

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\* Read before the Ophthalmic Section, St. Louis Medical Society, December, 1909.

1. *The Ophthalmoscope, 1907-1908*, trans. by Rosa Ford.

2. *Interstate Medical Journal*, Vol. XV, No. 4.

scelera, rupture of the choroid, and traumatic paralysis of the levator palpebrae and rectus superioris.

It was recently my fortune to encounter a traumatism of this character, the details of which are as follows:

*Case Report:* M. G., Male, age seven days, came under observation June 20, 1909.

*Ocular History:* Immediately after birth it was noted that the baby's right eye was unnaturally white. There was considerable swelling of the right eyelids, but no appreciable discharge. The condition remained practically the same up to the time of my first examination. I am indebted to Dr. I. Spector, with whom I saw the case in consultation, for an account of the obstetrical history of the mother.

Mrs. G., primipara, age 20, rather corpulent, always in good health, was confined June 13, 1909. The first and second stages of labor were decidedly prolonged, lasting nearly thirty-four hours. The first stage lasted about twenty-six hours, due perhaps to "dry labor," as the bag of waters ruptured at the beginning of this stage. The second stage was also prolonged, as the head, which presented in L. O. A., remained stationary in the pelvic inlet without any signs of progress for three and one-half hours. This delay was probably due to insufficient uterine contractions. When the patient was nearly thirty-four hours in labor, she began to show signs of exhaustion and it was decided to terminate labor by forceps. To this end, Dr. Golland was called in consultation and his report follows:

Presentation and position L. O. A., cervix nearly completely dilated, head not wholly engaged. No progress and little chance of normal termination. Forceps were applied high in the lateral position. There was no marked disproportion between the fetal head and pelvis. Both mother and child were in good condition at termination of labor. The mother's convalescence was uninterrupted.

On examination I found the right cornea opaque, of a milky white appearance, save for a very small annular rim which, though infiltrated, permitted a dim view of the iris. Both eyes could be normally opened and closed and there was no wound or tumefaction of the lids. The position of the forceps blade was represented by deep indentations and lacerations of the scalp extending from the upper part of the frontal bone on the right side down to the

right superior orbital margin. The markings were so distinct that it was possible to determine that the rounded end of the forceps had lain directly across the eyeball, probably exerting pressure through the closed lids on the globe. The marks are even now conspicuous and easily demonstrable. The cornea had very much the appearance of a dense leucoma, but without any surface distortion. There was no staining to fluorescein. The child was in excellent condition in other respects and I assured the parents that I believed he would regain, at least partially, a transparency of the cornea. Dionin, 5 per cent solution, was prescribed for use every three hours and hot applications were ordered twice a day. The left eye was entirely normal.

On July 6 the cornea had notably cleared at the periphery, though still presenting a fairly dense white infiltration centrally. From that time to the present, the baby has been under almost daily observation and the clearing has progressed to the point where you see it now. At present there is a faint central nebula of the cornea, roughly quadrilateral in shape, extending from the upper to the lower third and traversing the pupillary area. The later treatment has consisted of massage with yellow oxide of mercury ointment, alternating with 5 per cent dionin ointment.

A study of the one hundred and twelve cases cited by Wolff <sup>(1)</sup> shows that thirty-two of them were corneal injuries. This form of injury is the most frequent of all ocular injuries occurring during the act of birth. It has been investigated, especially by Thompson and Buchanan <sup>(2)</sup>, who describe two forms: In the first, the opacity is diffuse and soon passes away; in the second, there occur linear or irregular stripes of opacity which are permanent. The first type depends upon the edema of the cornea, the second upon tears in Descemet's membrane. Illustrative of the second type may be cited the following case from Buchanan: A six-year-old boy had an internal squint of the right eye incident to a high degree of inverse myopic astigmatism. Examination revealed several vertical streaks of opacity in the nasal third of the cornea of this eye. The delivery was a very difficult forceps with wounding of the right temple and ecchymosis of the lids. Buchanan makes the interesting suggestion, which seems distinctly plausible, that many cases of unilateral high-grade astigmatism may with propriety be ascribed to corneal injury at birth.

3. *Trans. Oph. Soc. United Kingdom*, 1903.

The literature collated by Wolff contains the following references to complete corneal opacities following instrumental delivery: Author—Serval. The left eye was found lying partly outside the orbit and with dense corneal opacity. The delivery was affected after the application of high forceps. The pelvis was narrow. Author—Nagel: Immediately after birth it was found that the left cornea was entirely opaque, the opacity disappearing after a few days. The mother was a primipara, age 26 years. Thirty-two hours after the rupture of the membranes, the head had just engaged in the pelvic brim. The promontory could be reached. The large fontanelle was in front and to the right. The sagittal suture was in the left oblique diameter approaching the transverse. The occiput had descended a little. At this stage forceps was applied and delivery completed.

Another case reported by the same author was of total opacity of the cornea which disappeared after several weeks. The mother was a primipara in whom the membrane had ruptured forty hours previously. Only a small portion of the head had passed through the pelvic brim. The promontory could be reached; the sagittal suture was in the right oblique diameter approaching the transverse. The small fontanelle was in the left posterior position. The occiput had descended. The os had dilated to the size of a dollar when forceps was applied and delivery was completed. Fejer reports a case of entirely milk-white cornea complicated by crushing of the eyelids and subconjunctival hemorrhage, which occurred as a result of forceps delivery. Fejer believes that the corneal infiltration was directly due to pressure of the forceps. Noyes reports a case of corneal opacity in which the delivery was a difficult forceps, owing to narrow pelvis. DeWecker reports three cases of corneal opacity following forceps delivery, in one of which the entire cornea was temporarily opaque.

Since the publication of Wolff's paper, Pick (<sup>4</sup>) has reported the following case: One week after forceps delivery the child showed suggillations of the lids and 4-5 mm. of exophthalmus. The motility was preserved, but there was a total milk-white opacity of the cornea of the left eye. The progress of the case was favorable and the cornea had begun to clear at the time of the report. The injury was caused, in Pick's opinion, by direct pressure of

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4. Deutsch Med. Woch. No. 24, 1908.

one blade of the forceps on the orbit and the eyeball. This produced edema of the cornea and ruptures of Descemet's membrane. Pick (<sup>4</sup>) warns against making too favorable a prognosis, as occasionally hydrophthalmus may develop in such cases. That the opacity may occasionally persist is indicated by Truc's (<sup>5</sup>) case. His patient had a marked leucoma of the cornea with convergent strabismus, the leucoma being the direct result of forceps pressure over the eye and orbit during the act of birth.

It is seen from a study of Wolff's statistics that the great preponderance of injuries are incident to forceps deliveries. (Ninety-three cases out of one hundred and eight in which details of the labor were available.) Furthermore, eye accidents occur in the larger number of cases only when difficult obstetrical operations with the head still high have been performed. This is especially true when the pelvis is contracted. According to Wolff, the action of the forceps in producing eye injuries may be direct or indirect. I quote from Wolff as follows:

"A direct pressure of the forceps on the eye, with its harmful results as regards the orbit, the soft part surrounding the eye, and the globe itself, is especially to be feared when the forceps are applied to the head above the brim. In this position of the head the skull will be grasped, as a rule, exactly or almost exactly, in the fronto-occipital diameter and consequently the eye may easily come to lie directly beneath the forceps blade. Indirectly the forceps may lead to eye injuries: first, in that they cause fractures or depressions in neighboring skull bones, which extend to the orbit and eventually affect the eye itself. Second, through production of intracranial or intraorbital hemorrhages, and finally through an increase in the intracranial pressure due to the compression of the skull." While recognizing the technical necessity of applying the forceps to the head at the pelvic brim in the fronto-occipital diameter of the skull, this author suggests that, "Under the guidance of the hand, the endeavor should be made to apply the blades as exactly as possible, so as to avoid placing them directly over the eye. If the head, grasped in the forceps, enters the pelvis in a transverse position without rotating, it is advisable, bearing in mind the possibility of injuries to the eye, to take them off and apply them again obliquely. In case of a deep transverse position,

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5. *Ann. Oculist*, T. CXXIX, 1898.

it is proper for other reasons, as well as to avoid pressure on the eyes, to apply the instruments in the oblique diameter."

These suggestions are presented by Wolff for what they are worth, although he recognizes that we do not possess a certain means of absolutely avoiding eye injuries in forceps deliveries. Such traumas occur to the most skillful.

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### "ALTERNATING ILLUMINATION."

NELSON M. BLACK, M. D.,

MILWAUKEE, WIS.

Mr. Albert J. Jackson, in the March Issue of the *Illuminating Engineer*, in a short paper under the above title, makes a suggestion which may be decidedly beneficial in reducing "eye tire" from artificial illumination in these days when intense illumination is demanded.

His conclusion from a considerable number of observations of persons who have for various periods of time been subjected to the effect of different kinds of indirect lighting or where similar general illumination prevailed, has been "that a great deal of 'eye tire,' drowsiness and other evidences of discomfort could be eliminated if the eye were exercised, so to speak, and the waste matter which is constantly accumulating thrown off."

Marshall believes that "all who have conscientiously and broadly studied the subject of the effect of light on the eye are of the opinion that the eye, when compelled to operate in a space uniformly illuminated, and where, owing to the lack of different degrees of illumination shadows and color effects, it is unable to exercise itself, it will naturally, sooner or later, find the muscles incapable of satisfactorily performing their functions, partly owing to lack of usage.

"The thought has occurred to me that if it were possible to exercise the muscles of the eye involuntarily when the eye is endeavoring to work under such conditions as previously referred to, invaluable services would be rendered. While I have as yet not had the opportunity of actually trying out this theory, I am led to believe that, from a purely theoretical standpoint, the idea has some value and I therefore am prompted to give it publicity, trusting that some person or persons may be in a position to experiment with it and see to what extent it possesses value.

"The following experiments might lead to interesting conclusions: In a room where a uniform illumination of 2-foot candles is obtained on a horizontal plane equal to the average height of the eyes of persons while in a sitting position, attach to the lighting circuit a dimming device which would vary the illumination intensity, say from 1-foot candle to 2-foot candles, by exceedingly minute steps throughout a period of 15 minutes, so that the eye, by adjusting itself to this varying intensity of illumination, would exercise itself without the brain being conscious of such action, and observe whether this 'internal massage' assists in maintaining the elasticity of the muscles of the eye and in elimination of 'eye tire' and headaches which so often result when persons are compelled to stay any great length of time in a room too uniformly illuminated."

We all know what an apparent relief observed by rubbing the eyes after continued use in reading under artificial illumination and how we do it almost involuntarily. This massage of the ball clears out the blood vessels and lymph channels with their effete material and allows a fresh supply of blood and lymph to take its place; the eyes feel refreshed and we go on reading with comfort.

Referring to Mr. Marshall's suggested experiment; the test types used by me are engraved upon porcelain and are trans-illuminated. The electric current passes through a rheostat with which the intensity of illumination may be controlled at will. I have very often tried changing the intensity of illumination during an examination (especially when it has taken a considerable length of time), with the eyes under the effect of a cycloplegic and without, and found almost invariably that the individual would express relief when the intensity would be reduced and say, "Oh! that is better," and then, upon increasing the intensity again, would remark, "No! that is better."

The explanation which suggested itself was, that exhaustion of the visual purple caused the tiring and that the reduction in intensity of illumination gave a chance for its renewal, at least with the eyes under the effects of a cycloplegic when action of the ciliary body was paralyzed.

Mr. Marshall's suggestions along this line are certainly pertinent to the question of the effect upon the eyes of the demand for increased illumination. Another factor to be considered also is the effect of the color values in artificial illumination.



**A TRAUMATIC CATARACT OPERATION.**

BY W. S. WINDLE, M. S., M. D.,

OSKALOOSA, IOWA.

An interesting case of accidental lens extraction came under my observation three years ago. More strictly speaking, it proved to be a traumatic extraction of cataract in capsule, followed by results comparable to those of the Major Smith operation. The results attending this accident were more gratifying to all parties than were at first anticipated.

At the age of 24, Mr. O. F. M. received an injury to his right eye from a piece of steel, which reduced its vision to 6/200, his left eye, however, remained normal. Three years ago, at the age of 67, while laboring on his farm, he stooped to clean his plow and bumped his left eye against a projecting bar of iron. This caused a moderate amount of pain and shock, which lasted only a few minutes. Since that time he has never experienced any further pain in or around either eye. Following the injury, he immediately covered the wounded eye with his handkerchief and sought relief, arriving at my office within half an hour after the accident. On separating the lids in the process of examination, a large fragment of the lens was found lodged in the cul-de-sac. A slightly irregular, linear wound was observed in the upper, outer portion of the cornea, near the limbus, about 8 mm. in length. No lens debris could be discovered remaining in the eye. The corneal chamber was not entirely collapsed. A large fragment of the outer, upper portion of the iris had been torn away, forming a large coloboma; no incarceration of the iris, however, had occurred. Examination by the ophthalmoscope, later on, revealed clear media, excepting a small fragment of lens-capsule remaining at its lower attachment.

The treatment was as follows: Irrigated with 4 per cent boracic acid solution, instilled a drop of 4 per cent atropine sulphate solution, then both eyes were bandaged, and the patient was taken to his home, and put to bed in a darkened room. This treatment was repeated daily for one week, except that he was allowed to leave his bed after the second day. No marked reaction in the nature of inflammation, iritis and the like, followed the accident. Healing by first intention was prompt and uneventful.

A few weeks after the accident a cataract lens was purchased,  $+ 9.00$  sph. =  $+ 2.00$  cyl., axis 165 was selected. This lens he

has continued to wear up to the present. It gives him 20/100 vision, and by the additional aid of a reading glass he writes his letters and reads his paper.

Examination of the eye recently, shows the same conditions apparently present that existed at the time the lens was fitted, three years ago. The media are clear, showing no opacity of any kind to have developed to cloud his field of vision.

This case of traumatic expression of the lens in capsule is a silent, yet forcible argument in favor of the Major Smith operation, which is now performed more frequently than formerly by those who have had special opportunities for studying the operation and have sufficient skill as well as nerve to perform the same.

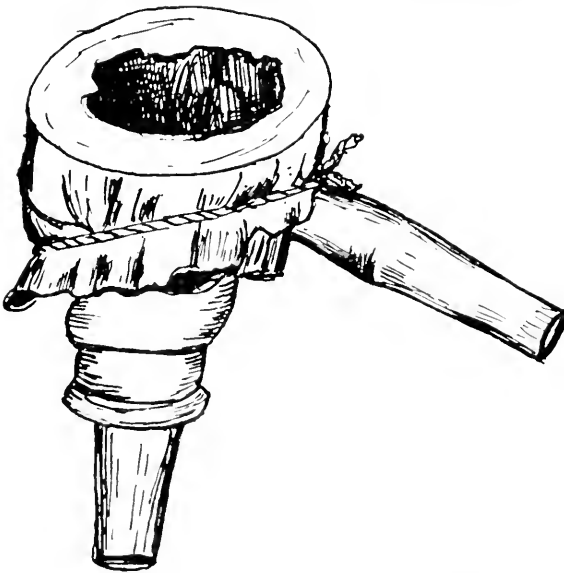
### DEVICE FOR PNEUMO-MASSAGE OF THE EYE.

By F. B. EATON, M. D.

PORTLAND, OREGON.

(Illustrated.)

Two articles by Dr. H. V. Würdemann in "Ophthalmology," (1907 and 1908), directed attention to the value of electricity



Pneumo-massage of Eye with Siegel Otoloscope.

and massage for the relief of optic atrophy consecutive to neuritis, *i. e.*, so-called secondary atrophy.

The apparatus used and suggested by Dr. Würdemann for massage, is somewhat expensive.

A useful and effective simple substitute is to take a hard-rubber Siegel otoscope, screw off the top lens and stretch across it a double piece of dentist's rubber dam, tying it in place, and then cutting out a hole with scissors, leaving a margin of about  $\frac{1}{8}$  inch. This is placed over the eye, its edge fitting closely around the anterior half of the globe, and the tube of the otoscope connected with the ordinary pump ear-masseur, run by motor or compressed air.

The forefinger closes the auditory end of the otoscope and serves to gauge, (with the length of stroke), the amount of suction and repulsion.

This device is not intended to wholly replace the pneumo-massage apparatus described by Dr. Würdemann, but it will enable the surgeon to "try out" the method which the writer has found sound in theory and practical in result if used in connection with the galvano-faradic currents.

A control experiment is readily made by examining the pallid disc before and after massage.

206 Medical Building.

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## CONJUNCTIVAL FLAPS IN OPHTHALMIC SURGERY\*

By W. GORDON M. BYERS, M. D.,

MONTREAL.

In perforating wounds of the cornea and sclerotic the danger of intraocular infection is heightened by peculiar local conditions. In the first place, as is well known, one has, even in the normal conjunctival sac, microorganisms ever ready to pass through possible openings in the protective coats of the eye and to produce intraocular inflammations of the most destructive character. Still greater is the danger of mischief within the eye in cases of inflammation of the conjunctiva and especially in cases of obstruction of the lachrymal canal. Long before bacteriology had isolated the organisms present, it was known clinically that to open the globe in the presence of these conditions was to court an almost certain panophthalmitis, and it has been for years an ophthalmic maxim

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\*Read before the American Ophthalmological Society, May 3, 1910.

never to open the eyeball under these circumstances. A second predisposing factor is attributable to the density of the cornea and the sclerotic and to the poor vascular supply of these structures. Because of the rigidity of the protective coats of the eye, there is slow and imperfect coaptation of the lips of wounds of their tissue; and, because of the paucity of blood vessels (and this applies particularly to the cornea as being an entirely avascular structure), fibrinous extravasation and cellular proliferation are tardy and efficient. Wounds of the cornea, as is well known, are permeable to bacteria for many days after their infliction. Lastly, one has the interior of the globe occupied by a culture medium—the vitreous—eminently adapted to the growth of organisms. Not infrequently in operative procedures, and very often in traumatic perforations of the globe, the vitreous is brought into direct contact with infective agencies, through rupture of its delicate hyaloid membrane and prolapse of its substance into the wound. Here, in spite of our most painstaking efforts to free them, tags of vitreous will, at times, remain as fuses leading to the inflammable mass within.

To combat these inherent defects one has a valuable agent in the conjunctiva of the eyeball. Unlike the sclerotic and the cornea it is richly vascular, can deliver an abundant supply of agglutinating lymph, which quickly gums together the lips of the wound: can rapidly furnish a large force of protecting leucocytes, and lend from both its epithelial and subepithelial structures elements that early and materially assist in the repair of tissues with which they may be brought in contact.\* In a mechanical way, too, its anatomical peculiarities—its delicate scleral attachments, its elasticity allowing of considerable lateral expansion, and, again, its abundant blood supply make of it a structure admirably adapted for plastic work.

The principle of conjunctival flaps, if I may use the expression, was first enunciated by one of my teachers, Professor Schoeler, of Berlin, who published his valuable paper on the subject in 1877. This communication, however, appeared in a report which was not widely read, and the suggestions contained therein were, as a consequence, not immediately adopted by the profession. It remained

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\*The part played here by the conjunctiva is comparable in practically every case to that taken by the iris, acting from within, in wounds and perforations of the cornea.

See a paper by my colleague, Dr. Fred Tooke, *Oph. Record*, Aug., 1908.

for Professor Kuhnt, who had independently worked out the same idea, to fix the matter as a distinct ophthalmic practice. In several valuable communications, with which every oculist should be familiar, Professor Kuhnt has so elaborated the principle that, with the work of Professor Schoeler, really very little remains to be said on the subject. Much of what is presented in this short paper is already known to members of this society; but I am convinced from reading and wide observation that conjunctival flaps are still not so generally appreciated and employed by ophthalmic surgeons as they deserve to be. It is the object of this paper to once again emphasize the value of the suggestions of Professors Schoeler and Kuhnt, and incidentally to bring to your notice a few minor variations of the principle which have grown out of my own practice and experience.

In the first place, while not used here in the form of a true flap, the conjunctiva is of great protective value in so-called "needling" operations. Early influenced while house-surgeon at "Moorfields" by a case of panophthalmitis which I saw develop after discission of a lamellar cataract through corneal tissue and entirely destroy the eye, I have always availed myself of a peripheral route in doing this operation. My practice has invariably been, starting a few millimeters from the corneo-scleral margin, to puncture the conjunctiva, and, having passed the needle beneath the conjunctiva the distance mentioned, to enter the anterior chamber through the ring of sclerotic that forms its confine. The advantages of this procedure are so apparent that it is remarkable that so many operators still do their discissions through corneal tissue and so many authors still describe the old corneal route.\*

In doing a needling in the way I have described, so little aqueous is lost that one can in clear view make the repeated attempts which are often necessary to effect an opening in a tough capsule; and, on withdrawing the needle, the conjunctiva merely contains a wound which can be considered as practically sealed the moment the operation is ended, and is under any circumstances situated at a safe distance from the scleral opening. In needling through the cornea, the aqueous almost invariably escapes, the globe becomes

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\*See, for example, May, "Diseases of the Eye," 6th edition, 1909, p. 296; Swanzy and Werner, "Diseases of the Eye," 9th edition, 1907, p. 489; and Fox, "A Practical Treatise on Ophthalmology," 1910, p. 421. I would go so far as to say that, in the light of the knowledge of the bacteriology of the conjunctiva which we now possess, needlings through cornea tissue are no longer justifiable.

lax, and the cornea dull, clear vision during the procedure is difficult or impossible, the pupil often contracts and still further obscures the field, and, in the end, a track is left in the rigid corneal tissue which for days is permeable to pathogenic organisms.

In capsulotomies as generally performed, because one is obliged to puncture the hyaloid membrane, a certain amount of vitreous often escapes from the anterior chamber; and, though one carefully trims this away, one must necessarily have shreds which remain and are exposed to infection. To prevent this and to secure speedy union of the lips of the wound, it has always been my practice to create a small conjunctival flap with the scissors before going through the corneo-scleral junction, and to seal my wound by turning it back at the end of the operation. The ease with which this great protection can be obtained should make its application obligatory in every case of this kind.

In the extraction of senile cataracts the preparation of a conjunctival flap has very generally formed a step in the operation since attention was drawn to the matter by Professor Snellen, at Edinburgh, in 1884. The method of carrying out the procedure and its great value are so well known that it would be quite superfluous on my part to dwell upon them at length at this time. I only wish to point out here that the usefulness of the flap is to a certain extent limited by its incompleteness when made in the ordinary way, and to cite a case which illustrates this point as well as an extreme application of the principle.

Mrs. T., aged 71, consulted me on June 8th, 1907, for loss of sight in both eyes. On examining the patient I found a mature cataract and chronic obstruction of the lachrymal canal on each side. Pressure over the lachrymal sacs caused a slight regurgitation of mucoid material, which, when examined by Doctor Klotz, was found to contain staphylococci and the bacillus mucosus capsulatus of Friedlaender. The indications were clear, and I first excised both lachrymal sacs by the new subperiosteal method. Ten weeks later, when perfect healing had taken place, the conjunctiva looked healthy, and smears and cultures showed only staphylococci in the conjunctival sac. I removed the cataract from the right eye. The operation in itself was perfect; a large conjunctival flap above brought about rapid closure of the wound, and on the following day the eye looked clear and bright. Twenty-four hours later, however, unmistakable signs of commencing panophthalmitis were present, apparently from infection through the lower-inner end of the corneal incision; and six days later the eyeball was so completely disorganized and painful that an evisceration had to be done. The patient was, needless to say, greatly disappointed; but she consented in the following November to have me do the other eye. This time I decided to take no chances, and at

the operation first prepared with scissors a large conjunctival flap which extended well back over the globe, and downwards so far that when replaced it thoroughly covered the point of entrance and the point of exit of my knife on the outer and inner side of the globe respectively. Otherwise the operation was performed in the usual way, the only difficulty being slight hæmorrhage and slight obscuration of the upper part of the cornea in making the section. Healing of the large flap was rapid and uneventful, and the result of the operation was satisfactory in every respect.\*

In removing foreign bodies from the interior of the globe by the electro magnet, I follow a rule of thumb which is very generally observed,—if the foreign body is in front of the iris and ciliary body, extract from the anterior chamber; if behind, through the sclerotic. In the latter case it is generally the custom to enter the globe directly through the conjunctiva; but, as here again the vitreous cavity is directly opened up, I prefer to place the conjunctiva as an obstacle in the way of infection. I make an incision which runs parallel to the fornix and midway between this and the limbus, and then cuts which run from either end of the first incision toward the cornea. The flap, made of a size to suit requirements, is dissected up and turned back, and the sclerotic as now exposed is incised for the removal of the foreign body. When this has been removed, and the flap replaced and fixed in position by a couple of sutures, one has perfect protection of the scleral opening, and practical freedom from the danger of infecting the vitreous or tags of this substance leading to the interior of the eye. In all the cases I have operated upon in this way the result has left nothing to be desired.

The use of the conjunctival flap in Mules' operation has always seemed to me of definite value. In the operation as originally described by Mules, sutures were passed directly through the conjunctiva and sclerotic to close the eyeball anteriorly after the removal of its contents and the insertion of the glass globe. A few unfavorable cases, in which breaking down of the wound and extrusion of the globe occurred, led the late Dr. Buller to think that infection along the deep sutures with consequent suppuration was the cause of his failures, and he modified the operation in the following way: Instead of cutting directly into the eyeball, he first incised the conjunctiva immediately about the whole periphery of

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\*I have in mind now the case of an old man who is entirely blind from senile cataracts. Persistent and long continued efforts have entirely failed to eliminate large numbers of colon bacilli from his conjunctival sacs, and I believe an operation along these lines offers the greatest chance of success.

the cornea, and for some distance backwards freed this membrane from its slight scleral attachments. He then removed the cornea, eviscerated the contents of the globe, and inserted the glass ball in the usual manner; but closed his wound in a manner somewhat different to that proposed by Mules. The edges of the scleral opening were brought together in a vertical direction by fine silk sutures which were allowed to remain and become imbedded, while the edges of the conjunctival aperture were sewn together in a horizontal direction with silk sutures which were afterwards removed. In this way not only was the wound strengthened, but the possibilities of infection of the scleral stiches was entirely excluded.

The last point in connection with the operative phase of conjunctival flaps to which I wish to call your attention is a small one in connection with the repair of scleral wounds. It is a very general custom to cover the rupture in these cases by conjunctival flaps, but almost invariably the sutures are placed directly over the aperture leading to the vitreous or through which vitreous is protruding. A danger arising from this practice and a method of overcoming it are illustrated by the following cases:

A young man consulted me at my office for an injury which he had received but a few minutes previously while cutting branches from a tree with a pen knife directed accidentally to his right eye. On examination I found an oblique wound of the cornea which extended from about the center of this structure to a point well beyond the ciliary region in the sclerotic coat. There was slight retraction of the pupil at a point corresponding to the wound, and the tension of the globe was reduced. Later on in the day, with the patient under general anesthesia I completely freed the prolapsed iris and brought conjunctival flaps over the wound, placing the sutures, however, directly over the wound in the usual way. At the first dressing on the following day everything looked perfectly satisfactory; but twenty-four hours later the eye presented the signs of an incipient panophthalmitis, which had apparently originated from an infection that had entered the globe along the tracks of the conjunctival sutures. In spite of everything that could be done the eyeball was lost.

This experience suggested to me the advisability of placing the edges of the conjunctival flaps and their sutures at a safe distance from the scleral opening, and have since always done this in the way described in the following case.

A young lad was injured by a stone while at play on the afternoon of September 2d, 1902. On examining the right eye I found a horizontal wound which extended from a few millimeters in front of the corneoscleral margin to a point about one centimeter behind the limbus. Vitreous was presenting, the pupil was irregular from iridodialysis of its outer periphery, and there was a small hyphemia in



the anterior chamber. Under cocain I cut away the vitreous and prepared my flaps in the following manner: the upper one I dissected up so freely from the sclerotic that it readily lent itself to considerable stretching and displacement, while from the lower one I merely cut away a portion of its upper border. On bringing the edges of these flaps together, I had a conjunctival wound the suture line of which extended somewhat obliquely but well below the scleral aperture. It is virtually impossible to have contraanimation from the conjunctival sac under these circumstances, and the case made a perfect recovery with 6/5 vision.

Another case which I believe could not have been saved by any other means is as follows:

A little girl of thirteen was referred to me two years ago by Doctor Skeels, of St. Albans. She had been struck in the left eye by a piece of stone two days previously. On examination I found a large rupture in the lower-outer quadrant of the sclerotic coat, a triangular flap of which was pressed back by the protruding ciliary body. There was slight pericorneal injection, but the pupil was active and there was no intraocular haemorrhage. In spite of the apparently hopeless aspect of the case I decided to attempt to save the eyeball; and accordingly, under general anaesthesia, I cut away the prolapse of uveal tissue, replaced the scleral flap, fixed it in position by two fine china-silk sutures similar to those which I use in Mules' operation, and, finally, covered the whole field with conjunctival flaps prepared in the way described in connection with the preceding case. The eye quieted rapidly, and, though watched carefully by Doctor Skeels, has never shown any signs of recurring inflammation.

The use of conjunctival flaps as an aid to healing in inflammatory conditions of the cornea, and especially in perforations of this structure, is another aspect of this subject which does not, it seems to me, receive the serious attention to which it is entitled; but I have purposely avoided this topic to speak only of operative procedures at this time.

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The Trachoma Institute of Philadelphia was founded April 27 for the purpose of giving to immigrants suffering from trachoma, thus offering them a chance of cure instead of immediate deportation. Dr. Aaron Bray is chief of staff and Dr. B. S. Krisher secretary.

## FURTHER OBSERVATIONS ON THE JOINT REMOVAL OF CAPSULE AND LENS

(The Major Smith Operation.)\*

BY ROBERT SATTLER, M. D.,

CINCINNATI, OHIO.

The joint removal of the cataractous lens, within its unbroken capsule, in either an early or late stage, must be considered the aim of extraction. Successfully accomplished, it eliminates the otherwise troublesome complication of a more or less empty but retained capsule which thickens and grows opaque, rendering additional surgical interference almost a certainty. The distinctive feature of the Smith-Indian method, the delivery of the lens within its unbroken capsule, is a higher expression of surgical achievement than the similar step of the linear extraction which has heretofore been the almost universal practice, with, it must be said, a growing proportion of success in the restoration of vision.

Let us briefly contrast the advantages and disadvantages of the two movements which have the same purpose, that of permanently and completely clearing and reopening the pupillary area.

First, we must consider the relative danger of loss of vitreous humor. If this happens, it is always a calamity as part of one or the other operation. When we compare the technical execution of the two movements, we must admit that long familiarity and almost universal practice has simplified and facilitated the method of capsule opening. When we adopt the Smith-Indian method, we abandon much that is familiar and safe from long and satisfactory experience. This delivery is made through firm, deliberate and continuous pressure with the blunt point of a large strabismus hook at a point near the lower margin of the cornea. The object of this pressure is *to rupture the zonula, to tilt, in rotation or by upward sliding, the whole body of the lens and force it into the large opening of the original wound which it must fill or completely occupy and where it must be held by the skill of the operator from first to last, or until the zonular attachment is peeled off.* If this succeeds, as it does in many cases, without loss of vitreous body or other complications, with a corneal incision and smaller iridectomy, as part of the Smith method, or as a part of the oper-

\*Synopsis of an article read before the Ohio State Medical Society, held at Toledo, Ohio, May 12, 1910.

ative sequence of the modern or old method, we cannot withhold our admiration of this brilliant discovery or fail to regard it as a new achievement. That it will entirely replace capsular opening and expression seems improbable, but it will be a frequent and superior substitute for patient and surgeon in a large and growing proportion of cases where it will prove itself incomparably preferable. If common experience once shows that its technical execution is as safe for the average ophthalmic surgeon and also gives us more conclusive information as to the cases in which it is not applicable, the fame of Major Smith and his followers will be permanently upheld.

The Smith method, even at present, must be considered incomplete, but if the important step, joint removal of the lens and capsule, can successfully be made a part of the old or modern operation and thereby insure it against admitted shortcomings, its unquestionable advantage alone as compared with the similar step of the older method must be conceded.

The following account embraces my experience with a series of twenty-five consecutive cases of cataract in which the attempt was made to extract the lens in its capsule, and my conclusions are based upon the total number to the present date in which the same attempt was made.

At the outset I must state that it was not my intention on the information I could obtain to practice the method of Major Smith as such, for I was unwilling, until I had more convincing proof, to give up the opening incision with a flap of conjunctiva, followed by the clean and straight-limbed iridectomy I am wont to make. I adopted and substituted as far as was justifiable and practicable joint removal of the lens and capsule for capsule laceration and expression.

In four of the twenty-five cases, which all represented early and late stages of senile cataract, the attempt at intra-capsular removal was unsuccessful. The lens was delivered by the old plan with uneventful recovery. Of the remaining twenty-one, there was loss of vitreous in eight and in one of these the capsule was ruptured and retained. The entire eight made good recoveries. The acuity of vision was under 0.5 in five and over this or fully 0.6, in three. All had drawn up pupils and not one, because of this, could be classed as a perfect surgical success.

Eight of the remaining thirteen, uncomplicated intra-capsular extractions, with no loss of vitreous, recovered full normal vision, and of these two had been previously iridectomized and two had morganian or flaccid lenses, and all could, from a surgical point of view, be classed as successes.

The remaining five uncomplicated cases, with no loss of vitreous, recovered with more or less pupil deformity, but with vision higher than 0.6.

In respect to speed of recovery and absence of iritis or other complications, all were incomparably favorable. In three of the thirteen cases, haziness of the cornea occurred, but without pain or other unpleasant consequences. The opening incision was in all, a more or less peripheric one, its amplitude and large flap of conjunctiva its distinguishing feature. Puncture and counter puncture at the limbus, but the entire incision encroaching a little more on the scleral than on the corneal side. In the first eight extractions, the iridectomy was small and equivalent more to slitting or notching the pupillary border of the iris, such as I had witnessed at Dayton, Ohio, but I soon returned to a more liberal excision with limbs extending to the periphery of the iris, for, in spite of painstaking attempts at reposition, incarceration and agglutination were frequent, and, if these did not result, the drawing up of the pupillary border was, to say the least, objectionable, because it prevented a perfect surgical success and also interfered with or marred the visual result obtained in spite of it.

The section and the smaller iridectomy are, from my point of view, the greatest objections to the Smith method. There can be no question that for our Anglo-Saxon and Latin descendants, with large lenses and better antecedent conditions of living and nutrition, but also with greater vulnerability to surgical traumatism, the peripheric incision is justly regarded as the safest in the hands of most operators. Also as far as ease and ability are concerned to make its amplitude its chief feature. With attached flap of conjunctiva, which must be determined in each case by the judgment of the surgeon, better wound coaptation and nutrition as well as protection from infection are secured.

A less peripheric incision or one on the corneal side of the limbus or even placed entirely in the clear cornea with its apex

or height several millimeters from the sclero-corneal border most certainly renders intra-capsular extraction more facile, but our common and individual experience points to it as less safe for the patient, for the reason that its amplitude cannot so certainly be counted upon in even the most skillful hands, or with the clearest judgment and accurate vision of the average ophthalmic surgeon.

Iridectomy as part of the old or modern perfected operation should be a small, clean, straight excision of the iris, the limbs of which must reach to its periphery, to prevent subsequent incarceration. A small iridectomy as practiced by some of the followers of the Smith-Indian method, appears to me to accomplish, mainly, the weakening of the sphincter region of the iris only, and because of its smallness the pupil is often torn by the exit of the lens: it is in a larger number of cases equivalent only to a notching or retraction of the pupillary border of the iris and is mainly responsible for the subsequent drawing up and the formation of an ovoid pupil.

It is true that owing to the slight or altogether absent bleeding, the field of operation remains clear, but, so far as my experience goes, this smaller slit rather impedes than otherwise the ready detachment of the zonula, the first requisite for the intra-capsular removal of the lens as it can be understood by those who have not had the personal direction and example of the originator of this method.

If intra-capsular extraction by the Smith method is successful it is *next to perfect* as a surgical success and *perfect* as a visual one.

Simple extraction still remains the ideal. If it could be combined with joint removal of the lens and capsule it would realize for us the highest ideal of extraction, but it is neither safe nor practical in the light of past or present experience.

Extraction with iridectomy and capsule opening and expression still hold out to the average ophthalmic surgeon whose surgical practice or at least the number of whose cataract cases for operation is limited the safest chances for success. Not that I wish to convey the impression that the Smith-Indian method is not safe or practical for I confidently believe it to be so for any one of discriminate judgment in diagnosis and selection of cases and with inborn and acquired surgical aptitude, but *I want to state that its*

*technical execution though easy and smooth in some cases is infinitely more difficult than that of the older method for the similar movement in the common run of operative cases.* I would urge those who would be in the line of progress to a trial, but I would counsel the beginner to precede intra-capsular extraction by a preliminary iridectomy. This would insure a clear field of operation and would eliminate bleeding at the final attempt at delivery of the lens. If the lens, after patient and prolonged pressure manipulation, cannot be made to advance or rotate into the ample corneal opening section and vitreous has not been lost, I would advise a return to the old plan of capsule opening, etc.

This forceful trituration of the lens, which the pressure manipulation implies, I have found to be advantageous rather than otherwise in bringing about a more thorough clearing out of the capsule and the four cases which have been mentioned have demonstrated this to me.

The Smith-Indian method, even in its present evolution, should be selected and preferred for all cases of capsular thickening, morganiam and otherwise, and also for all excessively slow and stationary incomplete opacities in individuals past forty-five and older and for a growing number of the common expressions of cataract in old subjects, as individual and common surgical experience affords us more conclusive evidence of its unquestionable merit and enables us to seek and find the cases for which it is the preferable method.

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## COLORED TORIC GLASS FOR USE IN EXAMINING CASES OF OCULAR PARALYSIS.\*

BY GORDON M. BYERS, M. D.

MONTREAL.

While small appliances like that which I have to describe are in themselves unimportant, their widespread use and their use for a long period mean in the aggregate a great saving of time; and anything that helps to smooth the difficulties of medical practice is undoubtedly worth while.

In making a differential diagnosis of ocular paralysis, it is customary to place a red glass before one of the patient's eyes, first, to enable him to more easily locate the two objects, and, secondly, to

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\*Read before the American Ophthalmological Society, May 4, 1910.

overcome any tendency to binocular vision that may remain. But the use of the colored glass, as ordinarily taken from the test case, is often the cause of slight but real annoyance. In the lateral ocular movements, the vision of the eye before which the glass is placed first strikes the rim of the lens, and then passes beyond it, out of the colored field. This confuses the patient and makes it difficult both for him and the examiner to accurately place the images.

About four years ago I tried to remedy this defect by making a glass double the size of that which is found in the test case; but this only partially overcame the difficulty which I wish to correct. With the introduction of toric lenses it struck me that a colored glass of this sort might be of service in making examinations easier in the class of cases I have mentioned. The little apparatus was procured for me by Mr. R. N. Taylor, of Montreal, from a large company in England, as the leading optical concerns in the United States were unable to make it. It is simply a large, perfectly-ground toric lense, of a rich red color, properly rimmed, and supplied with a convenient handle; but the wider color field which the curved glass affords does away almost entirely with the difficulties previously experienced in examining cases of ocular paralysis.

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The first meeting of the regularly organized Oxford Ophthalmological Congress took place on Thursday and Friday, July 21 and 22, at Oxford, England. The opening address was made by Prof. Wm. Osler. The program embraced many valuable contributions to literature, among them a number on the physiology. Demonstrations to eye literature, among them a number on the physiology. Demonstrations on the anatomy and physiology of the eye were given in that department of the University, as well as a display of optical trip to Reading, was much appreciated.

**A CRITICISM OF THE SMITH-INDIAN CATARACT OPERATION OF EXTRACTION IN THE CAPSULE. A REPORT OF TWENTY-THREE CASES OPERATED ON BY MAJOR SMITH ON FEBRUARY 27, 1909, IN THE C. J. OPHTHALMIC HOSPITAL, BOMBAY.**

BY MAJOR P. P. KILKELLY, I. M. S.,

BOMBAY, INDIA.

On the 27th February, 1909, at my request, Major Henry Smith, Civil Surgeon, Jullundur, performed 23 cataract extractions at the Sir C. J. Ophthalmic Hospital.

2. The results are given in full in tabulated form. They analyze as follows:

No. of cases	Vision
1 .....	6/15
2 .....	6/20
7 .....	6/30
3 .....	6/40
1 .....	6/60
5 .....	fingers from 10 to 18 ft.
1 .....	moving bodies.

3. Accidents during operation.

Capsule ruptured.

during extraction ..... 4 cases  
Definite Vitreous escape..... 2 cases

4. Complications.

Complication	No. of cases
Iris incarceration in lips of wound.....	6
Capsule tags in wound.....	4
Vitreous opacities .....	7
Iritis .....	7

5. This subject of extraction of Cataract in Capsule has been much discussed, and some of the correspondence has been almost acrimonious. It is, however, impossible to dissociate Major Smith's name from the operation. He has performed it so often and advocates its superiority so strongly that criticism must of necessity refer to his particular methods of operating and his results.

6. The result of these 23 operations performed by Major Smith himself confirms me in the opinion I expressed at the Medical Congress last year when I invited Major Smith to operate at the C. J. Ophthalmic Hospital.



7. I then stated that I had performed some 600 extractions in capsule, but that I had given up the operation as a routine procedure, being convinced that in the best interests of the patient the operation should only be performed in very exceptional cases.

8. It is clearly shown by these cases that accidents occur and a high percentage of bad results follows intra-capsular extraction even when the operation is performed by Major Smith himself, and for my part, I now feel that the patient is exposed to altogether unnecessary dangers by the operation.

9. The apparent simplicity of his operation makes it a fascinating one and in this fascination lies its danger, as beginners are tempted to perform it before they have mastered the ordinary.

10. Major Smith's method of operating is well described by Major Birdwood in the *Indian Medical Gazette* of January, 1910.  
*Method of Reposing Iris.*

Major Birdwood mentions that the Iris is adjusted after extraction of the Lens with a pair of Iris forceps or a Strabismus Hook. I think this accounts for the high percentage of incarcerated Iris. In the 23 cases under notice, Major Smith inserted the point of a Strabismus Hook at the edge of the wound and was satisfied that he has relapsed the Iris.

11. During the extraction of the Lens in capsule, the Iris is often forced into the corners of the wound and to my mind, it is impossible to conceive how a round and comparatively large instrument like a Strabismus Hook could reach the extreme angles of the wound. Further, as the eye is in nearly every instance strongly rotated upwards, it is difficult for the operator to see what the point of the Strabismus Hook is doing. To some of us onlookers it appeared to be merely stirring up the Vitreous.

12. Pressure applied during extraction.

In some of the cases at least it seemed that the pressure necessary was dangerous. Many lenses shelled out with the utmost ease, in others it was only the undoubted determination and persistence of the operator that brought about the desired result or caused a ruptured Capsule or escape of Vitreous. It seems to me that this excessive pressure is liable to cause injury to the deeper structures and may be responsible for Vitreous opacities.

13. **Iritis.**

This complication appeared in a high percentage of the cases, even when the Lens was extracted in the Capsule intact. It is, I believe, claimed that Iritis is extremely rare.

14. Report of cases.

We have had reports of these operations from Surgeons all over India, but most of these are merely enumerations of thousands of extractions performed and statements claiming percentage of successes varying from 90 per cent to 99.5 per cent.

15. Statistics such as these are valueless, although I fully recognize that it is almost impossible to obtain reliable figures. For example, Major Smith, Civil Surgeon, Jullundur, fulfills all the duties of Civil Surgeon of a large District. I believe he is also superintendent of jail. He has a large general hospital and private practice, and in addition to all this, he performs in the busy season some fifty cataract extractions a day. He told us that he performs the cataract extractions at a rate of from twelve to fifteen per hour. Let us take fifteen, nearly four hours' work. Say three hours more to hospital work seeing his patients and performing other operations, such as removal of superior Maxilla, etc. One hour for the jail. Two hours for his private patients, official and otherwise. This gives us a total of ten hours' work.

16. The twenty-three cases under notice were examined by myself, Doctors Frederick, Bensley and N. D. Portius of Seattle, Wash., U. S. A., experienced ophthalmic surgeons. They had both spent some time with Major Smith at Jullundur.

17. We found that from ten to fifteen minutes was required for the examination of each case, i. e., fifty cases would take at least nine hours. It is obvious, therefore, that it is a physical impossibility for a busy man to examine the patients himself, and he has to trust entirely to subordinates in the matter of his notes and statistics when they refer to thousands of cases.

C. J. OPHTHALMIC HOSPITAL.

Bombay, November 2, 1910.

## CATARACT EXTRACTIONS IN CAPSULE by Major Smith on 27th, February, 1909

No.	Name	Vision before Oper.	Notes before Operation	NOTES DURING OPERATION	Date of Discharge.	No. of Days in Hosp.	Retino-scopy	Vision	REMARKS
1	S. S.	60	Normal		13 $\frac{1}{2}$	15	+14	60	Definite vitreous opacities.
2	S. S.	Moving bodies	Do.	Somersaulted.	13 $\frac{1}{2}$	15	+11	60	Stripped keratitis.
3	M. R.	Do.	Gr. Lids	Pt. squeezed. Vitreous escaped. Capsule removed with forceps.	15 $\frac{1}{2}$	17	+10	Moving Bodies.	Wound incompletely healed. Eye infected. Post-synechia; pupil contracted with exudation. Iritis.
4	M. R.	Do.	Do.	Lens somersaulted.	15 $\frac{1}{2}$	17	+16	9 feet	Faint pannus upper part of cornea, due to old granular lids.
5	M. H.	3 feet	Normal	Capsule ruptured, removed with forceps.	16 $\frac{1}{2}$	18	+14	26	Capsule tag attached to wound above.
6	A. F.	1 $\frac{1}{2}$ foot	Normal	Small escape of vitreous.	17 $\frac{1}{2}$	19	+14	36	Fine vitreous opacities.
7	A. F.	60	Do.		17 $\frac{1}{2}$	19	+12	36	No complications.
8	A. K.	Moving bodies	Do.		18 $\frac{1}{2}$	20	+13	36	No complication.
9	Do.	18 feet	Do.	Immature.	18 $\frac{1}{2}$	20	+13	36	No complication.
10	L. P.	1 $\frac{1}{2}$ foot	Do.		18 $\frac{1}{2}$	20	+14	60	Definite large vit-opacities. Evidence of recent iritis.
11	Do.	1 $\frac{1}{2}$ foot	Do.		18 $\frac{1}{2}$	20	+13	36	Vitreous opacities. Evidence of recent iritis.
12	H. P.	60	Pupil semi-dilated		18 $\frac{1}{2}$	20	+14	11 feet	Iris incarcerated. Fine vit-opacities. No clear view of fundus.
13	A. T.	Moving bodies	Normal	Stupid patient squeezed the eye, latt no escape of vitreous.	18 $\frac{1}{2}$	20	+13	60	No complications.
14	A. T.	Do.	Do.		18 $\frac{1}{2}$	20	+12	60	No complications.
15	F. D.	Do.	Do.	Lens somersaulted.	19 $\frac{1}{2}$	21	+14	60	No complications.
16	Do.	Do.	Do.		19 $\frac{1}{2}$	21	+12	13 feet	Distinct vitreous opacities. Tags of capsule in wound. Iris incarcerated. Pupil drawn up.
17	M. Do.	Do.	Do.		22 $\frac{1}{2}$	24	+12	60	No complications.
18	Do.	Do.	Do.		22 $\frac{1}{2}$	24	+12	60	No complications.
19	L. D.	Do.	Do.	Capsule burst, removed with dissecting forceps only.	22 $\frac{1}{2}$	27	+12	13 feet	Wound not closed. Much perforated infection. Cataractized 11 days after operation. A. C. full but marked vit-opacities on discharge. Iritis. Tags of capsule in wound. Iris incarcerated. Vitreous opacities. Eye inflamed. Iritis.
20	J. P.	60	Immature		22 $\frac{1}{2}$	27	+14	60	No complications.
21	Do.	Moving bodies	Pupil semi-dilated	Capsule ruptured; dissecting forceps failed to remove the whole capsule. Iritis; forceps put in twice, but some capsule left.	25 $\frac{1}{2}$	27	+14	60	Iris incarcerated and prolapsed. Prolapse cut off. Tag of capsule in wound.
22	C. A.	Moving bodies	Normal		25 $\frac{1}{2}$	27	+12	60	Much pericardial infection. Iritis. No fundus reflex. Marked post-synechia and pupillary membrane. Needled on 24th.
23	M. K.	3 feet	Normal	Capsule ruptured Partially removed by dissecting forceps and then iris forceps put in.	25 $\frac{1}{2}$	27	+13	18 feet	Iris incarcerated. Capsule present. Iritis. Vitreous opacities.

## A SPLINTER OF WOOD IN THE LEFT ORBIT FOR FIFTEEN YEARS.

### A CLINICAL NOTE.

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BY H. E. RANDALL, M. D.,

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FLINT, MICH.

The following brief history may be of interest to readers of *THE OPHTHALMIC RECORD*.

H. P. was injured about the head in the lumber woods fifteen years ago, i. e. in 1895. While removing sawdust from a shingle-saw he was hit in the eye by something that dazed him for a moment; after which he entirely recovered consciousness but was nauseated and eventually vomited. He thought he had been struck a glancing blow by some blunt instrument that "broke his malar bone," but the wound healed promptly. He subsequently noticed that his lip and part of his cheek lost the sense of feeling and this partial loss has been permanent. The last named symptom was the only one noticed about the eye until five years ago when the old scar and the surrounding tissues became red after taking iodide of potassium which had been ordered for an attack of syphilis acquired subsequent to the injury. As soon as the medicine was stopped the inflammatory signs disappeared, but when he resumed the remedy they returned. Finally, the wound area became swollen, broke down and discharged some pus. The sinus thus opened did not heal and it was in consequence of this state of affairs that he presented himself for treatment.

The fistulous opening, which had persisted for two years, was closed by the following procedure: An incision opening up the sinus was made, the finger was introduced into the opening and a splinter of wood about two inches in length was felt and removed. The scar tissue around the opening was excised and two stitches completed the operation—after which the wound promptly healed. The foreign body proved to be a cedar splinter of the kind used in Michigan fifteen or twenty years ago for the making of shingles. This sliver has probably been in the orbital cavity since the date of the original injury.

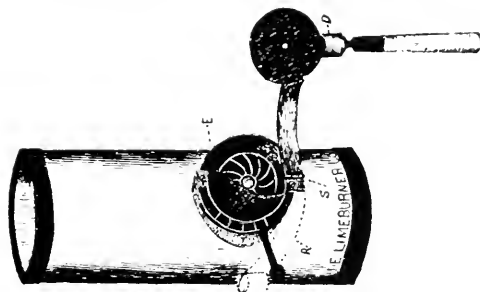
# AN EYE SHADE FOR THE IRIS DIAPHRAGM CHIMNEY, COMBINED WITH DEVICE FOR HOLDING A RETINOSCOPE.

By J. N. RHODES, M. D.

PHILADELPHIA.

Having a sensitive retina, and being unable to keep my left closed while doing retinoscopic work I attached a shade to the iris shutter as seen in the cut at E. This enables an operator to keep both eyes open while doing shadow work and makes the work no care to the other eye.

To the bottom of this shield and fastened by the same screw I attached a semicircular band about a half an inch broad as seen in the cut. This band as may be seen is hinged and, consequently may be turned into any position wanted, and if not wanted may be turned out of the way as seen at R. On the outer end of this band



there is a ring, noticed at D, through which may be slipped a retinoscope. The retinoscope has been moved in the drawing more to the right than is necessary while in use, in order to show the shield.

This devise is quite handy for demonstration purposes, as with it a teacher may find what he wants a student to see, and call him to see it, while the light rests just in the proper place. Then, too, it allows the operator to use both hands in changing the lenses. The retinoscope while in the holder can be used by tilting to illuminate the box of lenses, so that the desired glass may be quickly selected.

I believe, at best the shadow test work is an injury to the operator's eye, i. e., the eye behind the retinoscope. At all events it tires mine, and so does the want of a shade tire the other one. The water is never missed until the keg is empty. Few of us forget the empty white sheet we sometimes see for a retina.

## Reports of Societies

### AMERICAN OPHTHALMOLOGICAL SOCIETY.

#### Forty-sixth Annual Meeting.

The forty-sixth annual meeting of the American Ophthalmological Society was held in Washington, D. C., on May 3 and 4, 1910. Dr. Samuel Theobald of Baltimore, Md., presided. The following papers were read and discussed:

#### **The Post-Operative History of Eighteen Cases of Magnetic Foreign Bodies Removed from the Eye by the Haab or Giant Magnet.**

Dr. Charles Stedman Bull, New York.—The cases considered were those in which the foreign body was located either in the vitreous or in the fundus. In every case the foreign body was located by the X-rays, and in seventeen cases extracted by the Haab magnet, through the entrance wound in seven cases and through another channel in ten cases. The foreign body was in the vitreous in eight cases and in the fundus in ten cases. A cataract later developed in eight cases. Phthisis bulbi occurred in six cases and sympathetic ophthalmia in eight cases. Enucleation was necessary in ten cases. Vision was entirely lost at the time of accident in five cases. Permanent useful vision was not gained in a single case.

Conclusions. 1. When the wound of entrance is in the anterior segment of the eye, and the foreign body has been located in vitreous or fundus, no attempt should be made to draw it forward through the wound of entrance by the Haab magnet, but an incision should be made through the sclera at the nearest point to the foreign body and attempts made to extract it by means of the small magnet.

2. These eyes are all suffering from the shock of the original accident, and we have not rightly appreciated the severity of the second shock of applying the giant magnet and forcibly drawing the foreign body through the delicate tissues already seriously injured.

3. If infection has already developed, the eye should at once be enucleated.

4. These eyes are all in a dangerous condition, and the prognosis must always be unfavorable. It is better when the foreign

body is lodged in the vitreous than when it is located in the retina, choroid or ciliary body.

5. If attempted extraction fails, it is better to enucleate the eye at once.

6. Even after a successful extraction useful vision is permanently lost in the great majority of cases, and enucleation will be necessary in order to save the fellow eye. The danger of sympathetic inflammation is ever present, and a general insidious uveitis may develop months and even years afterwards, and extend to the other eye.

*DISCUSSION.* Dr. Peter A. Callan, New York, reported thirty cases of foreign body injury; twenty-eight of which were X-rayed and the other two the body could be seen with the ophthalmoscope. Eight cases the body had been in the eye for from six months to eighteen years; seven were blind and no attempt was made to remove body and one consented to enucleation. In remaining twenty-two cases, twenty-one had body removed, while one was a case of double perforation. In six the eye was lost, while sixteen were discharged with eye quiet. The results were one case with 20/20, two with 20/30, one with 20/50, one with 20/70, one with 20/100, one reported "good vision," two with occluded pupil, one with thickened capsule and six in which no recent report could be obtained.

Dr. E. E. Holt, Portland, said that in his experience, if the foreign body is removed before the case has gone too long, useful vision should result, providing the accident does not cause too much traumatism.

Dr. W. E. Lambert, New York, gave the history of ten cases that he had looked up, in all of which, except one, the foreign body had been removed through the anterior part of the eye. In six cases there was useful vision. He felt that in the majority of cases, if the foreign body is removed shortly after the accident, we can hope to get at least some vision.

Dr. J. E. Weeks, New York, reported seventeen cases seen during the last five years; in thirteen metal was removed through the anterior route, and in four through the sclera. In two enucleation was done and in two was refused. In no case was sympathetic inflammation seen. In three cases there was good vision: 20/20 in

one, and useful vision in the other two. He prefers extraction by the anterior route if the body is small, believing that the traumatism is less than if an incision in the sclera is made.

Dr. Edward Jackson, Denver, has always felt that the giant magnet and Haab method of using it was an easy rather than a superior method of extracting foreign bodies, that it left to magnetic force a good deal that might be done with care by the surgeon with more advantage to the patient. In cases of small foreign bodies, the magnet point can be extended with benefit by placing the broad tip in contact with scissors, and having traction exerted to bring the body between the blades. He desired to emphasize the first conclusion of the paper, that, after locating the foreign body, it was better to extract with the small magnet at the nearest point through the sclera than to attempt to persistently extract it with the giant magnet.

Dr. W. B. Marple, New York, would select the scleral route if the body is in the vitreous, and is small in size, and the lens is uninjured; but if large and irregular in shape, and especially if the lens is injured, he prefers extraction through the wound of entrance. He had not seen the retinal detachment follow extraction through a scleral incision.

Dr. Wm. M. Sweet, Philadelphia, said that each foreign body injury must be studied as a separate and distinct condition, the ultimate result of operation being influenced not alone by the method of extraction but depending upon the character of the injury, the extent to which the ocular structures have been injured, the length of time the foreign substance has been in the eye and the ease with which it is removed. A record was given of thirty-nine cases of foreign bodies extracted through a scleral incision, all studied over three years after injury. In three vision equaled 6/6, two 6/9, one 6/30, one 6/60, five cataract but good l. p., five imperfect l. p., seven partial retinal detachment, six slightly shrunk, nine eyeballs lost. Extraction through a scleral incision was favored, as causing less traumatism and in no instance had he seen retinal detachment that could be assigned to the scleral cut.

Dr. R. L. Randolph said he agreed with Dr. Bull in the positive way he advised enucleation of such eyes as he had described. He believed that the injured eye is not removed soon enough, and that cases of sympathetic trouble were therefore more frequent. He



referred to eight cases of sympathetic ophthalmitis which he had seen. He removes the eyeball in all cases of injury in which intraocular tension is low at the end of the first week after the injury.

Dr. G. E. de Schweinitz, Philadelphia.—It seems to me that whether or not the eyeball should be removed in the event of infection presenting, depends upon where the infection is and how widespread. In several instances of infection in the anterior chamber the procedure recommended of breaking up the lens and washing out the fragments and the pus has saved the eyeball. Although the results were not good visually, to a workingman it is more convenient than the wearing of a glass eye.

Dr. Charles J. Kipp, Newark, always uses the giant magnet, and has succeeded in removing the metal by the anterior route without previous X-ray examination. In a number of instances recently the fragment after removal has been dropped into a culture media to ascertain if the body contained infectious material, but none were shown, and all the cases recovered so far as infection was concerned.

Dr. Bull (closing) said that by infection he meant the vitreous or choroid or both. If confined to the anterior structures, an attempt should be made to save the eye. He agreed that each patient must be studied as an individual entity. In six cases reported upon by others, and in which more or less useful vision lasted for periods from nine months to two years, he had found by personal examination later that sight in all was lost.

**Large Piece of Wood Embedded Deeply in the Orbit of Child  
Twenty-five Months. Removed with Preservation of  
Vision.**

Dr. C. A. Veasey, Spokane, Wash.—The history showed that a two-year-old child fell and injured his eye. No one was present, and how or by what the injury occurred was not known. Only a small spot of conjunctival ecchymosis was observed. Two years later, because of a persistent discharge, exploration under general anesthesia revealed a sinus leading deeply into the posterior portion of the orbit, from which there was removed a piece of wood 2.5 cm. in length, the latter having been in the orbital tissues for twenty-five months.

*DISCUSSION.* Dr. Lewis H. Taylor, Wilkes-Barre, Pa., mentioned a case reported by him some two years ago, in which he removed from the orbit of a child 20 months old, a piece of pen-holder  $1\frac{1}{2}$  inches long,  $\frac{1}{8}$  inch at small end and  $\frac{3}{16}$  inch at large end, which had penetrated through the nose into the orbit.

Dr. W. E. Lambert, New York, cited a case of a piece of wood which had perforated the upper lid into the orbit. The child recovered, but the optic nerve atrophied.

Dr. M. H. Post, St. Louis, removed a piece of wood  $\frac{1}{2} \times \frac{3}{16}$  inch from the orbit, but the discharge recurred three years later and exploration showed another piece nearly as large as the first. The child recovered with normal vision.

### **Conjunctival Flaps in Ophthalmic Surgery**

Dr. W. G. M. Byers, Montreal, Can.—The secretions of the conjunctival sac favor intraocular infection in wounds of the cornea and sclera, and in large wounds the covering of the opening with a flap of conjunctiva insures a firm support and hastens recovery.

*DISCUSSION.* Dr. Charles J. Kipp, Newark, uses a conjunctival flap only in cases in which the wound is large and extends almost across the entire cornea. In all instances the result was good.

Dr. William M. Sweet, Philadelphia, thought that all operators used a flap of conjunctiva in covering the opening in the sclera made to extract foreign bodies. In incised wounds at the limbus he strongly advocated a flap in all instances, as wounds in this situation usually reopened after primary healing when the normal tension was restored.

Dr. R. A. Reeves, Toronto, Can., has had good results in saving the eyeball in sloughing ulcer in gonorrheal ophthalmia by making horizontal flaps above and below, slitting through the cornea, and stitching the flaps in position.

Dr. J. E. Weeks, New York, has employed the conjunctival flap in fistula of the cornea after cataract extraction or iridectomy. After bandaging the eyes for 48 hours the flap becomes adherent and the fistule closed.

Dr. G. E. de Schweinitz, Philadelphia, reported a case in which one eye was blind and the other severely injured, and, after removing the prolapsed iris, a conjunctival flap was drawn over the entire cornea and tied with purse-string sutures. At the end of

eight days the sutures were cut and the flap pushed back, and the cornea was found to be completely healed with no sign of infection.

Dr. Samuel Theobald, Baltimore, questioned whether a pseudo-ptyerygium does not follow the covering of corneal ulcers or wounds by flaps.

**Report of a Case of Leuco-Sarcoma of the Iris. Successful Removal by Iridectomy with Useful Vision.**

Dr. J. Thorington, Philadelphia.—A woman, aged 28 years, first noticed small white spot in the lower outer part of left iris eight months before applying for advice. Growth removed by a broad iridectomy, which included healthy iris tissue around the tumor. Complete recovery and improved vision with correcting glasses. The diagnosis of leuco-sarcoma was confirmed by pathological examination by Dr. Harold G. Goldberg.

*DISCUSSION.* Dr. C. A. Veasey, Spokane, Wash., mentioned a case operated upon by him fifteen years ago without recurrence, and was still of the opinion that in small sarcoma of the iris, in which the ciliary border was not involved, iridectomy was the proper procedure.

Dr. F. M. Wilson, Bridgeport, Conn., cited a case of sarcoma which had after many years recurred.

**New Growths of the Lacrimal Gland. A Case. Death.**

Dr. Edwin E. Jack, Boston.—The most usual new growth of the lacrimal gland is of a mixed form, analogous to certain tumors of the salivary and parotid glands, as first shown by Warthin. The patient, a man aged 36, showed evidence of the growth nine years before. The first operation removed the growth apparently entire, but in a year there was recurrence, with extension deep in orbit, and a second operation was done. In a third operation there was excision of the lids, exenteration of the orbit, and removal of a portion of the orbital root and outer wall. These measures failed to stop progress of disease. The pathological report by Dr. Verhoeff was "congenital epithelial tumor of the lacrimal gland."

*DISCUSSION.* Dr. Charles J. Kipp, Newark, remembered a case of a woman 50 years old with a tumor of the gland, which was thought to be completely removed. There was recurrence in eight years and death. In every case of sarcoma of the orbit upon which he has operated, the disease recurred with greater virulence and resulted in death in a short time.

**Congenital Pigmentation of the Cornea.**

Dr. T. B. Holloway, Philadelphia.—The writer reports three cases of melanosis of the cornea, corresponding to the type first reported by Kunkenburg in 1899. In each case there existed a bilateral, symmetrical, vertical spindle of brownish color, which occupied the deeper layers of the cornea. The eyes were otherwise normal.

**Report of a Case of Epibulbar Sarcoma.**

Dr. C. A. Veasey, Spokane, Wash.—The patient, a female, aged 40 years, had an epibulbar growth develop at the site of an old injury received from a slate pencil twenty-five years before. It was removed four times, each time recurring, and the eye was finally enucleated. No recurrence locally or by metastases has been observed.

*DISCUSSION.* Dr. G. E. de Schweinitz, Philadelphia, detailed the history of two cases. In one there had been seven different removals of the growth, and when seen by him there was implication of the orbit and several nodules in the neck. The eyeball was removed, but the woman died about a year later. The other patient, a woman, had a small, densely scattered epibulbar sarcoma, which arose as a small nevoid growth. The tumor was excised, with good primary result, but recurrence later necessitated removal of globe nine years ago. No recurrence of disease.

Dr. F. H. Verhoeff, Boston, said it was only exceptionally that tumors arise from nevi, and if the case mentioned by Dr. de Schweinitz was one of nevus there would not likely be recurrence.

**Cylindroma of the Orbit.**

Dr. J. Herbert Claiborne, New York.—Patient, a woman, aged 46. Left eye displaced about 13 mm. below the right, marked ptosis. Tumor about 22x8 mm. beneath left orbital ridge, and slightly movable. The growth was removed through an incision of the eyebrow. The author believes that in the great majority of cases the brow incision, carried from the inner to the outer canthus, will permit the removal of most orbital tumors without the necessity of employing the Krönlein operation, which always results in considerable deformity, as it is impossible to secure the flap accurately to the bony surfaces. The pathological report by Dr. E. L. Gatman showed the growth to be "Cylindroma orbita (endothelioma)."

**Tumor of the Adrenal Gland, with Metastasis in the Orbit.**

Dr. Alexander Quackenboss, Boston.—The patient, a boy, 3 years of age, had ecchymosis of lids, exophthalmos; no history of injury. Enlarged glands in neck, axilla and groin. Nodular mass in abdomen. Tumors of orbit in young children should arouse suspicion of metastasis from an adrenal growth. Microscopic examination of specimens, Dr. F. H. Verhoeff showed characteristic rosette formation of cells. Dr. J. H. Wright has recently pointed out that this form of tumor arises from embryonic nerve cells of the adrenal gland, the rosette representing a typical embryonic ganglia. These tumors are apparently analogous to the so-called glioma retinae.

**A Critical Study of the Ocular Asymmetry of the Formosan Savage. (Read by title.)**

Dr. Charles A. Oliver, Philadelphia.—The results of a series of specialized investigations made upon official life-sized photographic representations of adult male and female example types of the as yet uncontaminated portions of the savage tribes of the island, the subjects being principally "head hunters," and hence ethnologically isolated and forming a good illustration of a special savage grouping.

**Some Impressions of Certain Affections in the Negro as Compared with the White Race.**

Dr. J. L. Minor, Memphis, Tenn.—The results of the examination of the eyes of the pupils in the public schools of Memphis shows a remarkable absence of refractive errors in the negro and a better average of normal vision. That presbyopia is rarely complained of and muscular defects infrequent; that strabismus is almost unknown to them; that glaucoma is much more frequent in the Negro; that trachoma is often seen, and, finally, that there seems to be more tolerance of certain inflammatory diseases of the eye of the Negro than is possessed by the white race.

*DISCUSSION.* Dr. H. D. Bruns, New Orleans, said that of 31,178 cases examined there were only 478 cases of trachoma, of which 45 were colored. Of 6,098 cases of refraction, 1,686 were colored. Glaucoma was about equally divided between the two races. The Negro has gonorrheal ophthalmia frequently, but he shows a marked resistance to the disease.

Dr. Charles W. Kollock, Charleston, S. C., said that his experience has been the same; that the vision of the Negro is better than that of the white. Affections of the cornea are more frequent among the black and mulatto, due to their syphilitic taint and unsanitary ways of living. Trachoma is rare. He considered that glaucoma was as common among the whites as the colored. Myopia is infrequent. Squint is extremely rare in the pure-blooded Negro, and he could recall having seen only two or three cases.

Dr. Samuel Theobald, Baltimore, had found trachoma rare, but numerous cases of high myopia, with the usual choroidal disease. He believed that glaucoma was more common in the young Negroes than in the white race.

Dr. Lucien Howe, Buffalo, said that he has made microscopical examination of the eyes of a perfect type of Negro, and found no difference between it and the eye of the white race.

#### **Possible Influence of Racial Characteristics in Accounting for the Success of the Smith-Indian Operation.**

Dr. C. F. Clark, Columbus, Ohio.—In some important respects the average Indian, with his quiet and submissive manner of accepting what comes to him, his simple life, and his freedom from redundant flesh and orbital fat may be regarded as a more favorable subject for cataract operation than the average American, but when we consider the absence of preparation, the poverty and caste prejudices of the patient, and the limited resources of the hospital, we realize that these advantages enjoyed by Major Smith are largely offset by serious disadvantages. In the after treatment the Indian, while less intelligent, is more patient and free from nervous irritability than many of the patients in this country. When I state that of 450 patients under treatment at one time in the new hospital only two were fed by the hospital authorities, the remainder being cared for and fed by their friends, it will be realized that the limitations of poverty and caste restrictions as to food are important factors in estimating the chances of obtaining good results.

*DISCUSSION.* Dr. R. L. Randolph, Baltimore, asked what success had been obtained in operating upon Negroes. He said that as a class they were difficult to deal with, and in nearly all iritis followed extraction.

Dr. Herbert Harlan, Baltimore, had performed the operation

upon Negroes with the same success, except that the Negro is more difficult to control.

### **Exhibition of Instruments, Etc.**

*Circular Disc for Prism Testings.* Dr. Lucien Howe, Buffalo, N. Y. It is unfortunately true that there is still much confusion, even in the minds of ophthalmologists, as to what is meant by tests with prisms. In any test of the dynamic condition of the eyes by prisms it should be understood that the examiner had begun with prisms which were too strong and preceded with those which were weaker. The revolving prisms are not reliable as tests of dynamic conditions, and the author exhibited a disc which he had devised, 5 cm. in diameter, with eleven prisms of even numbers on one side of eleven prisms of odd numbers on the other. A pendulum indicates when the prisms are horizontal.

*Scleral Trephine.* Dr. F. H. Verhoeff, Boston, exhibited a small trephine for making a round hole in operating for a sub-conjunctival fistula. The tube and the rod fit so that there is no play. In operating there is first made a conjunctival flap down to the limbus. The operation, to which he gives the name Sclerostomy, is only done where ordinary iridectomy is not sufficient.

Dr. W. B. Marple, New York, said that he had performed the scleral trephine operation, and had passed a thread through the episcleral tissue at the point the disc is to be removed, which indicated the instant the last fibre of the sclera had been cut through.

*Chart for Testing Visual Acuity.* Dr. Edward Jackson, Denver, showed a small test card adopted by the international committee for testing the normal visual acuity. The card contains numerous black circles on a white ground, the black line having a width one-fifth its outer diameter and a break in the ring equal to its width. If the chart is placed at 5 metres, the small figure in connection with each of the broken rings indicates the visual acuity.

*Schiøtz Tonometer.* Dr. W. B. Marple, New York, stated that after a thorough test of the instrument, extending over a year, he considered it the most valuable means at the disposal of the ophthalmologist for testing the tension of the eyeball. The instrument is easy to use, and the results even when made by different observers are uniform, indicating accuracy of the tests.

Dr. Charles J. Kipp, Newark, N. J., said he had had considerable difficulty in having the patients remain quiet even with cocaine.

*Glass for Testing for Diplopia.* Dr. W. G. M. Byers showed a circular glass for use in the examination for diplopia. The device was made in England from glass specially procured in France, but he had not been able to secure glass of the right color and thickness in America.

*Bony Strictures of the Lacrymal Duct.* Dr. West, Baltimore, exhibited several patients upon whom a modified method of making a bony window for drainage in cases of bony stenosis of the duct. The operation was valuable in those cases in which ordinary measures could not be employed.

### **The Difficulty Sometimes Met with in the Diagnosis of a Subretinal Mass.**

Dr. Robert L. Randolph, Baltimore.—The case exhibited showed a wound-like mass or eminence brilliantly white, evidently of some months' standing situated beneath the retina. Areas of pigment near by suggested the changes seen in the retinitis pigmentosa, while other areas showed choroidal changes of the characteristic "disseminate type." The question for decision was whether the mass is of inflammatory origin or whether it is a leuco-sarcoma. Tuberculin injections had not showed any change in the tumor.

*DISCUSSION.* Dr. W. B. Johnson, Paterson, believed the tumor came from the sclera, and this was also the opinion of Dr. Koller.

Dr. J. E. Weeks, New York, stated that he had studied the growth six months previously, and again in three months after a course of iodides, at which later date he thought there had been a slight recession in the size of the mass. The second observation led him to exclude sarcoma.

Dr. C. F. Clark, Columbus, suggested that an X-ray examination might be made, using a small film up the nose and beyond the ethmoid, as employed by him in the early days of X-rays, and in this way secure a picture with only the intervening ethmoid cells.

Dr. Arnold Knapp, New York, did not think that improvement under the use of iodides excluded sarcoma, and referred to



a case that proved to be leuco-sarcoma in which the drug had temporarily improved the condition.

Dr. F. H. Verhoeff, Boston, considered that the choroidal changes indicated some form of inflammation. He thought the growth cystic in character.

Dr. Percy Fridenberg, New York, thought that it might be a possible gumma in the sclera going on to connective tissue formation sufficient to cause some bulging.

#### **Gaucoma from Adhesion of the Lens Capsule to the Cornea.**

Dr. Arnold Knapp, New York.—Adhesion of the lens capsule to the cornea is frequently followed by glaucoma. It occurs generally after a penetrating injury to the eyeball or after a cataract operation. Subsequent treatment unsatisfactory and generally without results, if the adhesion is broad, the eye eventually becoming blind. Reports six cases, three cases due to traumatism and three after cataract extraction with iridectomy. A microscopic examination in one. Reduction of tension in two by operation of dividing the adhesion of the capsule to the cornea.

*DISCUSSION.* Dr. S. Lewis Ziegler, Philadelphia, referred to a case of glaucoma following a large incised wound of the cornea. After loosening all the adhesions which formed, the tension became normal.

Dr. E. Gruening, New York, has had excellent results in dividing the adhesions with the Knapp knife, which closes the wound made and prevents emptying of the anterior chamber.

#### **Some Observations on the Ocular Manifestations of Sinus Disease. (Read by title.)**

Dr. George E. de Schweinitz, Philadelphia.—All reference to the gross interpretations of nasal accessory sinus disease in ocular manifestation was omitted, and such external signs of orbital cellulitis, abscess, proptosis, tumor, diplopia. The symptoms considered were: (1) Recurring or fugitive edema of the eyelids, (2) recurring subconjunctival ecchymosis of the eyelids, and compares these manifestations with similar phenomena which have been recorded as the symptoms of migraine and arthritic diathesis, and distinguishes them from those well-known edemas of the eyelid which so often accompany sinus disease, existing as long as its acute manifestations

are present. (3) Recurring or fugitive episcleritis or episcleral congestion—not such ordinary conjunctival congestions as are the usual accompaniment of sinusitis, but comparable to those which have been described as fugacious periodic episcleritis (Fuchs), vasomotor dilatation of the vessels (Swan M. Burnett) and “hot eye” (Hutchinson). The differences and the similarities of these conditions are discussed, and illustrative cases are quoted. (4) Some unusual manifestations of scotoma, as the result of sinus disease, where the scotoma has been ring-shaped, wedge-shaped and paracentral and hemianopic in type, somewhat resembling the hemianopic scotoma of Treitel, the disease being limited in all probability to the sphenoid sinus.

#### **Implantation of a Metal Ball in Tenon's Capsule, with Report of Cases.**

Dr. William M. Sweet, Philadelphia.—The total number of cases was forty-eight, of which twenty-two were injuries from foreign bodies, ten punctured wounds, two traumatic ruptures, four painful eyes from glaucoma, four corneal staphyloma, four corneal leucoma and two corneal necrosis. The implanted balls were either gold or platinum, and varied in size from 13 to 15 mm. In two cases the gold ball came out. The operation may be performed in all cases in which the eyeball is to be removed except in panophthalmitis or in eyes containing malignant growths. The advantages of the operation are a more movable stump, less depression of the tissues beneath the brow and a socket that does not retain secretions. As to the complications usually claimed, it was found that the swelling of the lids was no greater than after ordinary enucleation, the ball in no instance had changed its position from the center of the orbit, and there was no evidence of any true sympathetic trouble following the implantations.

*DISCUSSION.* Dr. R. L. Randolph, Baltimore, agreed with Dr. Sweet that a ball should not be implanted after removal of the eye for intraocular sarcoma. While recurrence is rare, any sarcoma cells in the orbit might tend to recurrence from anything in the slightest degree irritating.

Dr. A. E. Davis, New York.—In the one case of sympathetic irritation reported by me, a paraffin ball escaped from the capsule through an opening made by the original operator, and caused irritation by pressure.

Dr. G. E. de Schweinitz, Philadelphia, said that he had lost glass balls that were implanted in the capsule, but never a gold one. Regarding sympathetic ophthalmitis he felt that there was an unreasonable prejudice against putting a ball into the socket of children after enucleation. He would not like to use a ball in any case of intraocular sarcoma unless he felt sure that there was no possibility of malignancy.

Dr. S. Lewis Ziegler, Philadelphia, stated that he had seen one case of sympathetic trouble after implantation, occurring in the service of a colleague. Massive doses of salicylates controlled the process.

Dr. E. V. L. Brown, Chicago, felt that in the implantation operation there is no tissue left that can cause sympathetic trouble.

**Report of a Case of Chronic Cyanotic Polythemia. (Read by title.)**

Dr. Walter R. Parker and Dr. George Slocum, Detroit, Mich.—The patient, a man, aged 43, had asthma for twelve years, cyanosis for seven years, and general weakness. Examination of red blood corpuscles, from 6,000,000 to 9,000,000; white, from 6,000 to 10,000; differential count, small lymph, 14.8 to 17 per cent; large lymph, 3.8 to 6 per cent; polynuclear, 65 to 67.6 per cent; eosinopolynuclear, 3.8 to 6.7 per cent; mast cells, 1.6 per cent; degenerate, 2.2 to 8.4 per cent. The fundus showed edema, with the blood vessels markedly dilated and tortuous, but more marked in the veins.

**The Nerve-Head in Wood Alcohol Amaurosis.**

Dr. Percy Fridenburg, New York.—Since the history of cases of wood alcohol poisoning are not always clear, the diagnosis would be assured if it were possible to recognize a characteristic change in the optic nerve. The author believes from the study of a series of proven cases that, at least in the latter atrophic stage, there are seen changes in the nerve-head not produced by any other agent. The nerve-head shows a deep excavation, extending almost to the scleral ring, and at times including it, so as to stimulate a glaucomatous cup. The color is never of the gray green seen in the latter condition, but pure white and at times silvery, or glistening. The excavation shows distinctly the mottled markings of the lamina cribrosa, and there is generally no trace of connective tissue

in the depth. This is the more striking as the atrophy in wood alcohol amaurosis is undoubtedly a post neuritic atrophy, and there is always evidence of a previous neuro-retinitis about the central vessels and in the retina surrounding the nerve-head. This consists of fine perivascular striae, irregular accumulations of pigment adjoining the choroidal ring, and not infrequently an atrophic ring or crescent somewhat like the glaucomatous halo. This combination of deep excavation, white atrophy, unobstructed cup and extra-papillary connective tissue changes is found in no other condition. The explanation of these changes are that acute neuro-retinitis goes on to atrophy so rapidly that there is no time for connective tissue to block up the lamina cribrosa and fill the cup, while nerve degeneration is so marked and complete as to cause not only saucer-like excavation, but a deep pseudo glaucomatous cupping. Occasionally peri-vascular connective tissue or pigment may be seen at the bottom of the cup, but this is exceptional.

*DISCUSSION.* Dr. E. V. L. Brown, Chicago, reported a similar case, in which there was glaucomatous cupping, but at no time was tension increased, as measured by the Schiötz tonometer. The poisoning came from spilling a gallon of fluid down the leg, soaking the clothing and filling the shoe. The clothes were allowed to dry without changing them. The following day there was a complete and sudden blindness. Except for the cupping of the disc, the eyegrounds were normal.

Dr. E. Greuning, New York, believed that a diagnosis could be made without looking at the disc from the history. He favored having the Society ask the government to include wood alcohol in the articles covered by the Pure Food Law, so that it could not be used in any article of food or drink.

Dr. G. E. de Schweinitz, Philadelphia, recorded two cases of wood alcohol blindness, one after a Jamaica ginger spree, and the other in a man accustomed to work in a closed space with a mixture containing 95 per cent alcohol. In the latter instance the poisoning was rapid, following inhalation. The nerve-head presented none of the characteristics described by Dr. Fridenburg.

Dr. W. H. Wilder, Chicago, cited several cases of poisoning by inhalation, with total blindness, reported some years ago. One of the cases recently examined showed marked glaucomatous cupping with no increase of intraocular tension.

Dr. W. H. Wilmer, Washington, recalled the case of a soldier in which blindness followed drinking of four drams of wood alcohol. An interesting point was that the man is now receiving a pension for blindness contracted in the service.

Dr. S. Lewis Ziegler, Philadelphia, asked the period of time required before the optic nerve changes referred to occur.

Dr. Arnold Knapp stated that the Agricultural Department had taken up the question of wood alcohol in connection with the Pure Food Law.

Dr. Fridenburg (closing) said that, while all cases might not corroborate his description, he felt that, with a deep cupping simulating glaucoma, without evidence of fulminant amblyopia, and slight perivascular striation, we can say that the patient was blinded with wood alcohol. The degeneration and atrophy come on comparatively early, within a few weeks.

### **The Eye Signs of Vasomotor Incoordination of Ataxia.**

Dr. Howard F. Hansell, Philadelphia.—The eye signs which collectively indicate the presence of vasomotor ataxia are venous hyperemia of the retina, the lagging and jerky descent of the upper lid in downward rotations of the ball, symmetrical pigmentation of the skin of the lids, the widened commissure and exophthalmos. It is suggested that some of the ocular signs may be caused by the disturbed function of the sympathetic nervous system, the source of the stimulation of the muscular coats of the vessels and of the unstriped fibre so abundant in the orbit.

*DISCUSSION.*—Dr. C. F. Clark, Columbus, Ohio, was convinced that the plan of study as pointed out in the paper, if carried out, would permit differentiation of the symptoms of thyroid disease such as has not been possible previously.

### **A Case of Spasm of the Retinal Arteries.**

Dr. Henry Dickson Bruns, New Orleans.—The patient was a school girl whose sight failed after a convulsion three weeks before. V=R. E. fingers, 4 feet, L. E. fingers, 15 feet. Complete recovery of sight in 11½ years. Primary condition one of extreme retinal anemia. Patient not reduced by illness or worry or extremely pale, nor did blood stream vary with inspiration and expiration, as in cases of ischaemia. Case agrees with those described as due to spasm of central artery. Patient of neurotic descent, and her-

self neurotic; no hysterical stigmata; flushes easily. The case important because observed for a long time until complete recovery; because no drugs were given, and because it furnishes important evidence of the reality of long continued spasm of the retinal arteries.

**DISCUSSION.** Dr. Wilbur B. Marple, New York, said that the spasm of the arteries had lasted longer than any case he had seen. He mentioned the case reported by Wangenmann in 1897, in which it was possible to observe the gradual filling of the vessels. An iridectomy put an end to the attacks.

Dr. H. F. Hansell, Philadelphia, cited two cases of monocular blindness, in which the ophthalmoscope showed normal eyegrounds. Recovery to a certain extent took place, the central portion recovering last.

Dr. Bruns (closing) said that it was important to decide whether we are dealing with mere spasm of an artery or ischaemia, since the treatment is different. In the literature one finds that spasm can be traced to the duration of several months, and the case reported lasted for this time before the better vision was obtained.

#### **The Histological Findings in a Case of Tuberculosis Cylitis and a Theory as to the Origin of Tuberculosis Scleritis and Keratitis.**

Dr. F. H. Verhoeff, Boston.—In tuberculosis scleritis the infection reaches the sclera through the filtration angle. The infecting bacilli are derived chiefly from the superficial vessels of the ciliary processes and are carried in the aqueous humor to the filtration angle. In tuberculosis keratitis the cornea becomes infected either by metastasis or extension from foci about the filtration angle, or, in a similar way, from the foci of preceding scleritis. Two forms of tuberculosis cyclitis are to be distinguished—namely, the interstitial and the superficial (punctate). Interstitial cyclitis is usually secondary to scleritis and due to direct extension of the latter. Superficial cyclitis occurs as direct blood metastases. Clinically, it manifests itself as one of the forms of serious cyclitis. Superficial tuberculous iritis, involving the posterior surface of the iris, may occur and is analogous to superficial tuberculous cyclitis.

#### **Illuminated Eye Testing Chart.**

Dr. H. G. Sherman, Cleveland, Ohio.—This was an improved method of illuminating the well-known Box Chart designed by

Dr. Nelson W. Black. Instead of using all four faces of the box, only one side is lighted, using reflected light only. Numerous forms of reflectors were tested, and the three 50-watt lamps were placed in a vertical line in the center of the box, one-half of each lamp bulb being covered with a coat of aluminum paint, the coated side being towards the chart to be illuminated. With each test a reading was made of the degree of illumination of the whole chart by a photometer. It was found that a reflector made of white bristol board, and curved to give a perfect reflected light from the interior of the box, gave a difference in illumination between the dark and light portions that was unnoticeable to the eye.

### **Recurrent Tubercular Choroiditis.**

Dr. Carl Koller, New York.—From the varied forms of choroidal affections, one type presents distinct clinical features. It occurs in young adults between 20 and 35 years, in apparent health, who have a slight blurring of vision. Besides precipitates on Descemet's membrane and occasional vitreous opacities, one finds a swelling of the nerve head, equally in one quadrant. At a distance of a few disks diameters from the nerve, not near enough to the macula to cause any serious disturbance of vision, a choroidal focus is found, having the appearance of a roundish heap of asbestos like fuzz as large or larger than the optic disk. After two or three months a sharply circumscribed choroidal defect is seen considerably larger than the original focus. It is white in its general appearance, partially covered with irregular pigment masses traversed by a few stray blood vessels and bordered by a narrow pigment margin. Characteristic of this form of choroiditis is its tendency to recur and the fact that the new focus is almost always at the edge of the old one. History of cases were given and reasons advanced for considering these foci tubercles.

*DISCUSSION.* Dr. W. B. Marple, New York, said that he had examined some of the cases included in the report, and was convinced as to their tuberculous origin. In his experience with children who have choroiditis not more than 2 or 3 per cent represent the cases due to tuberculous invasion.

Dr. E. E. Jack, Boston, stated that in the large number of children he had seen the only cases of tuberculous invasion of the choroid had been in those suffering from miliary tuberculosis.

### **Vaccine and Serum Therapy in Ophthalmology.**

Dr. John E. Weeks, New York.—The writer considers the local reaction in the eye following the subcutaneous injection of tuberculin to be the only diagnostic test of any value of those now employed. He regards the use of tuberculin as a therapeutic agent in tuberculosis of the eye as of great value. Gonococcic vaccine is of little if any value in acute gonorrhea, but it is very useful in the later manifestations of gonorrhea in the eye. The writer favors relatively small doses, 5 to 50 millions. The use of streptococcic vaccine is largely confined to erysipelas, of staphylococcic vaccine to hordeoli and eczematous processes of the eye. Vaccine from auto-genous strains are of most value. Control by the "opsonic index" has not yet reached a practical basis. Coley's toxins (vaccines) are of little value in ocular therapy.

Sera: The writer mentions gonococcic and streptococcic sera, Flexner's serum, and tetanus antitoxin as sometimes useful in ocular therapy. Of the cytogenic sera, those of Rogers and Beebe (thyroid sera) are of value in the treatment of exophthalmic goitre. The Wasserman reaction, is advocated as an aid in the diagnosis of obscure diseases of the eye.

### **Vaccine and Serum Therapy in Ocular Tuberculosis.**

Dr. George S. Derby, Boston.—A careful study of the literature and the writer's own experience with tuberculin, extending over four years, indicate that certain tuberculous affections of the eye are less favorable for treatment than are others. Conjunctival tuberculosis is most resistant, possibly explained by assuming that the disease here is primary. Of the bulbar types, it is believed that the choroidal is less amenable to treatment than others. The author reports 30 cases of ocular tuberculosis treated by tuberculin, 15 of sclero-keratitis, 9 of interstitial keratitis, and 6 of kerato-iritis. The earliest recorded was discharged cured somewhat over two years ago, while 3 cases of long duration are still under treatment. On the whole "the results are favorable, although in a number of cases it is by no means certain that a cure would not have taken place as speedily without the use of tuberculin."

*DISCUSSION:* Dr. F. H. Verhoeff, Boston, believed that the results of treatment depended upon the reaction secured, and that such a reaction should be of a character to be easily recognized. He



had used tuberculin in scleritis, and found that in cases in which a reaction was obtained the results of the treatment were good.

Dr. W. H. Wilder, Chicago, said that an interesting observation in the examination of these cases is that in making diagnostic tests with old tuberculin, the cases distinctly tuberculous show a local reaction in the affected eye, or at least an aggravation of symptoms.

Dr. S. D. Risley, Philadelphia, reported six cases of affections of the cornea and sclera treated by subcutaneous injections of old tuberculin, with cure in all.

Dr. W. G. M. Byers, Montreal, emphasized the importance of rest in the treatment of these cases.

Dr. T. B. Holloway, Philadelphia, recalled a case of tuberculous choroiditis in which the subcutaneous test was followed by a sharp local reaction not only in the diseased eye but in an old macula of the other eye.

Dr. Weeks (closing) said that it was thought that the old tuberculin was less valuable as a therapeutic agent because of the higher temperature employed in preparing, but he had used it in three cases with excellent results. He felt that light was dawning upon the question of the dosage of tuberculous vaccines.

Dr. Derby (closing) believed until there is some accurate method of dosage it is safer to use the milder strengths and work out gradually. He preferred the filtrate of tuberculin which is not prepared by heat, so that it is free from the objections of the old tuberculin.

#### **A Brief Note Concerning the Tropometer.**

Dr. George T. Stevens, New York.—In reference to the statement made that an instrument "very similar" to the tropometer had been previously used, a translation was presented of the paper by Dr. Nicati, published in 1877, and the statement made that this instrument was a perimeter with a sighting device for determining when the eye was at the centre of the arc. In other respects it did not differ from other perimeters, and the methods of examination were similar to those employed with perimeters.

**COLORADO OPHTHALMOLOGICAL SOCIETY.**

MEETING OF MARCH 19, 1910, IN DENVER,

DR. EDWARD JACKSON, PRESIDING.

**Outline of Ciliary Body by Transillumination.**

Drs. H. R. Stilwill and E. O. Sisson showed a woman of 27, who had been suddenly attacked with severe pain in both eyes three years before while sewing. The right eye became very much inflamed, vision gradually failing until it was now lost. At intervals pain had occurred in each eye, being worse during menstruation and while undergoing severe attacks of rheumatism. The vision of the left eye was 6/18 with  $-4.00$  spherical. There was no specific history; and the patient had four healthy children. Examination showed the right cornea to be generally hazy, with opaque spots below; iris muddy, with posterior synechia and irregular pupil; and anterior scleral staphyloma, bluish in color, and more marked in the upper-outer quadrant. The left sclera was slightly bluish. Transillumination of the right eye gave a remarkable demonstration of the ciliary body and processes outlined distinctly, as seen through the thinned sclera.

*Discussion*—Dr. Patterson would test for tuberculosis, as most of the cases he had seen were tubercular or had a family history of tuberculosis, and had done best while resting and leading an outdoor life. While rheumatism was a factor in scleritis, tubercular family history was the greatest factor. Total blindness was very rare.

Dr. Stevens considered the case one of deep scleritis, with total uveitis; and noted that transillumination showed more light through the sclera than through the pupil, which was blocked. He stated that scleritis was very common in Colorado, being due to rheumatism. His plan of treatment included sodium iodid, usually in small doses; atropin for the iritis or uveitis often present, or likely to follow scleritis; injections of normal salt solution and instillations of dionin. He also advised outdoor life, abundant drinking of water, meat three times a day and a free diet except starches, coffee, tea and alcoholic beverages. Tobacco, which raises the blood pressure, should also be interdicted.

**Cataract Treated by Discission.**

Dr. Jackson presented a man, aged 41, in whom non-traumatic

cataract had been treated by discission. When first seen, in 1904, there were extensive vitreous opacities in the right eye and the iris was thin and discolored, vision 4/25, lens clear. There was a history of uveitis several years previously. In September, 1906, there was uniform gray opacity of the nucleus, vision 3/150. In July, 1909, the eye had good light projection, with mature cataract. The patient desired discission. At the first operation a mere puncture was made in the capsule, causing no reaction. At the second an incision  $2\frac{1}{2}$  mm. long was made, horizontally, near the lower margin of the pupil. This was followed by notable shrinking of the lens. The third operation was a free vertical cut in the capsule, 4 mm. long. It was followed by breaking up of the lens, and removal of masses with moderate reaction. Absorption went on for two months, leaving a nucleus of about the size of the ordinary senile nucleus. In dividing this at the fourth operation the lens became wholly dislocated into the anterior chamber. Seven hours later there was dull pain in the eye, severe enough to cause nausea, tension plus 1, with ciliary tenderness. An incision was made in the lower margin of the cornea, and two-thirds of the broken up nucleus evacuated. Pain did not recur, reaction subsided after a few days; and two more needlings left a clear, black pupil, seven months after the first operation. Some scattered opacities remained in the vitreous; but corrected vision was 4/5. The left eye remained normal throughout.

### Localized Conjunctival Hyperemia.

Dr. W. C. Bane showed a woman of 18, whose right lower conjunctival cul de sac had been inflamed for three months, and the left for three weeks before. The lower half of each globe was involved, the upper half being normal. There had been headache and ocular pain. Vision was 4/5, with —1.50 spherical, in each eye, and the fundus was normal. The xerosis bacillus was found. Instillations of 20 per cent argyrol and inunctions of 3 per cent mercurial ointment had given no help. Dr. Bane was not clear as to the diagnosis.

*Discussion.*—Dr. Patterson thought that angular conjunctivitis was suggested by the lower lids of this patient, but not by the upper. When argyrol was used it was difficult to recover the infecting bacillus. On the supposition of diplobacillary infection

he would try zinc: preferring the salicylate to the sulphate of zinc. He mentioned the recent prevalence of pneumococcus conjunctivitis, in Colorado Springs, associated with the same infection of the nasal sinuses.

Dr. Ringle was impressed with sinus involvement, from the location and character of the pain.

Dr. Jackson considered involvement of the maxillary sinus probable, with extension of hyperemia to the margin of the orbit, thus affecting the lower cul de sac.

Dr. Bane had found no exudate in the sinuses of his patient; he attributed the pain to the intensity of the ocular disturbance, and questioned if the condition was not trachoma of the lower cul de sac.

### Central Guttate Choroiditis.

Dr. Bane also presented a woman of 48, with a history of hay fever for two summers. The right vision was  $\frac{4}{4}$ —, the left was  $\frac{4}{15}+$ , and had been dim for six months. There had been no aching of eyes or head. The urine showed a specific gravity of 1010, with absence of albumin or sugar. The right eye showed small whitish deposits in the macular region, and in the left this condition was similarly located but much more widespread, covering an area of 3 disk diameters. Dr. Bane had seen the same condition in persons of 60 and 70 years, respectively; the vision in both cases being below normal. He considered that all three cases belonged to the above classification, as pictured by Nettleship in his "Diseases of the Eye."

*Discussion.*—Dr. Patterson referred to a case he had reported, showing similar retinal changes, under the title, "Notes Illustrating the Progress of a Retinitis of Presumable Rheumatic Origin." (OPHTHALMIC RECORD, April, 1907.) He also mentioned another case that had previously presented a normal macula, but in which changes were now visible along the superior temporal artery, vision was only  $\frac{1}{2}$ , and the color field showed degenerative changes.

Dr. Jackson had seen whitish spots in renal or circinate retinitis only, but had observed yellow spots with normal vision. He would suspect high blood pressure in Dr. Bane's case, from the narrow veins.

**Obstruction of Retinal Artery.**

Dr. Jackson reported the case of a woman of 25, giving a history of temporary obscuration of vision, prior to an attack eleven months ago, in which the right eye became entirely blind for a few minutes. Then vision returned for objects in the lower half of the field, but was permanently lost in the upper half. The inferior branch of the central retinal artery was about half the diameter of the superior branch. The retina below the macula looked slightly pale, with several whitish dots scattered through it, and one black pigment patch connected with a small arterial branch. The field of vision was normal in the lower half. The upper portion was slightly narrowed concentrically, and presented a scotoma absolute a little above the fixation point, and gradually fading out to almost normal vision toward the periphery of the field. A small cilio-retinal artery ran to the macula. Central vision with correction equal  $4\frac{1}{4}$ . Left eye normal.

**Removal of Steel in Vitreous.**

Dr. E. W. Stevens reported a man of 36, in whom a splinter of steel had penetrated the cornea and lens, and lodged in the center of the vitreous. An X-ray picture, taken by Dr. S. B. Childs, located the foreign body. It was removed by a magnet, through the section usually made in the upper part of the cornea in removal of cataract. Pain, which resulted from swelling of the lens, was relieved by cold applications and blisters on the temples. The lens had protruded through the pupil, but was now receding and absorbing. The case was doing well. Later the lens would be extracted.

Dr. Stevens stated that he always had an X-ray photograph taken in cases of probable steel particle in the eye.

**Orbital Cellulitis.**

Dr. Stevens also reported the case of a woman of 18 with severe orbital cellulitis of the right side, with temperature range of  $101^{\circ}$  to  $104^{\circ}$ , following influenza. All the muscles of the right eye were paralyzed, but the media were clear and the fundus normal, and vision good. Chemosis of the conjunctiva was great, the lids were swollen and the eye was proptosed. In twenty-four hours the left superior and external recti muscles were paralyzed. The right ethmoidal and sphenoidal cells were removed, liberating pus,

and the orbit was drained by an incision, aided by gauze. On the following day the temperature was normal. The swelling quickly subsided and the paralysis and exophthalmos disappeared. Dr. Stevens said that the case had seemed typically one of sinus thrombosis.

*Discussion.*—Dr. Patterson related a case in which drainage of pus from the orbit into the antrum, and thence into the nose, had brought relief.

### **Orbital Infiltration.**

Dr. Bane reported the case of a youth whose right eye had been struck by a skate, twelve years before, cutting the lid and globe. Enucleation was promptly done. Because of the injured lid an artificial eye was hard to fit. The same eye had been worn twelve years. An infiltration of the orbit, resembling sarcoma, resulted. This mass was removed. Pathologic examination of the growth was made by Dr. J. C. Todd, who pronounced it chronic inflammatory tissue. The artificial eye was devoid of its glossy coating and was rather rough feeling.

### **Ring Abscess of Cornea.**

Dr. J. A. Patterson read a paper describing a case of peripheral annular infiltration of the cornea of an adult, which followed pneumonia and was coincident with herpes febrilis of the upper lip and lower eyelid. The article will be published in full elsewhere.

*Discussion.*—Dr. Ringle considered that degenerated cornea was very vulnerable to infection, as were also herpetic eruptions. He had a similar case under treatment for ulcer of cornea, with hypopyon and herpetic eruption, which was still in a critical state.

Dr. Jackson had an impression that ring abscess was a reaction to severe infection involving the whole cornea; all within the ring sloughing because choked off.

Dr. Stevens mentioned the case of an otherwise healthy woman who had suffered from dendritic corneal ulcer following an herpetic bleb on the lower lid.

GEORGE F. LIBBY, Secretary.

## Notes and News.

Personals and items of interest should be sent to Dr.  
Frank Brawley, 72 Madison street, Chicago.

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Dr. P. J. H. Farrell has removed his office to the Reliance building, 100 State street.

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Dr. Adolph Alt, of St. Louis, was elected vice-president of the American Academy of Medicine at the recent St. Louis meeting.

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Dr. Lily Kinnear, of Dubuque, Iowa, was recently elected vice-president of the Iowa State Society of Medical Women.

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Dr. B. Roy Jeffries of Boston was elected librarian to the Suffolk District Medical Society at the Boston meeting held April 30, 1910.

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It is reported that Professor Th. Leber, director of the University Eye Clinic at Heidelberg will resign his professorship at the end of the summer semester.

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Dr. Edward C. Adams of St. Joseph, Mo., died in that city May 14th, 1910, from cerebral hemorrhage, aged 52 years.

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Dr. Gilbert E. Brooke, delegate from the Straits Settlements, Singapore, gave a paper on "Trachoma" at the meeting of the Far-Eastern Association of Tropical Medicine, held in Manila, March 3.

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The officers for 1910-11 for the Section of Ophthalmology of the American Medical Association are: Chairman, Albert E. Bulson, Jr., Fort Wayne, Ind.; vice-chairman, Edward C. Ellett, Mem-

phis, Tenn.; secretary, Edgar S. Thompson, New York; delegate, John C. Bossidy, Boston.

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The Philadelphia Polyclinic has been thoroughly reorganized and will resume post-graduate teaching in all departments about September 15. The following changes have been made in the Ophthalmic staff: Dr. Wendell Reber elected professor of ophthalmology, vice Dr. James Thorington, resigned. Dr. Wm. Zentmayer, extra-mural lecturer on ophthalmology.

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It appears from the report read at the last general assembly of the Association Valentin-Haüy pour le bien des aveugles that during the year 1909 there were 491 new blind beneficiaries of the association. The most interesting work of the association is the Braille library, named after the inventor, consisting of volumes printed in raised points, by the industry of fifteen hundred persons scattered over the whole of France. During 1909 this library was increased by 1,921 volumes, which makes 26,000 altogether. There are 40,000 volumes annually in constant circulation, not only in Paris but in the provinces, where fifty-five branches are in regular operation.—*Four. A. M. A.*

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At the executive session of the American Ophthalmological Society the following officers were elected for the ensuing year: President, Dr. Emil Gruening; vice-president, Dr. Edward Jackson; secretary and treasurer, Dr. William M. Sweet; corresponding secretary, Dr. Arnold Knapp.

The next meeting of the society will be held at New London, Conn., July 11 and 12, 1911.

The society adopted the following resolution:

Whereas, the American Ophthalmological Society is strongly opposed to the so-called "optometry" bills, which are now being brought before our state legislatures, and

Whereas, this legislation is unnecessary, unwise, and involves a lowering of medical standards, and

Whereas, there can be no compromise with its advocates from the medical profession.

RESOLVED, That if opticians must be registered, it should be as opticians and not under the new name of "optometrists."



That if there must be recognition it should be legal only and not medical, and that the medical profession should not lend its sanction by serving on the optometry boards, or by taking "optometry" boards under the supervision of state boards of medical registration.

The following is the text of GOVERNOR HARMON'S VETO OF THE OPTOMETRY BILL, which passed the legislature in Ohio. It is given in full because of its straightforward reasoning and common sense attitude on this abuse. The campaign of education on this dangerous movement seems to be bearing fruit. Governor Harmon also refused to reconsider his veto in spite of the efforts of the Ohio Optical Association.

*To the General Assembly:*

Amended Senate Bill No. 51, entitled "A bill to regulate the practice of optometry," creates a board of five members to examine and license persons to practice "optometry," which it defines as "measurement of powers of vision and adaptation of lenses for the aid thereof by any means other than the use of drugs, medicine or surgery."

The express exemption of mere dealers in spectacles and eyeglasses, and the requirement that the examination shall include "anatomy and physiology of the eye" as well as "optics and such other subjects as said board may decide to be suitable and proper" show that the proposed license is to cover something more than the mere commercial supplying of eye lenses to customers. That something is necessarily, from its nature, a part of the field covered by medical science. Our statute (G. C. 1286) includes in the definition of that field the prescribing, advising, recommending, administering or dispensing, for a fee or compensation, not only of drugs or medicines, but of appliances for the cure or relief of a bodily injury, infirmity or disease. It is beyond question that the eye is so connected with the general system that the subject of impaired or imperfect vision cannot properly be considered as though it were an independent function, and it is conceded that, especially with children, the condition and needs of the eye cannot, in a great many cases, be known without the application of drugs for dilatation, as well as the examination of other bodily conditions.

A Step Downward. — So to set men, who have not themselves had medical education and stood the careful tests required by law

in the interest of the public health to examine and license others to deal with one of the most delicate and important organs, appears to me a step downward leading to grave peril. And if what may be called the mere mechanical treatment of defective vision is to be made a special branch of medical practice, it should be under the jurisdiction of the state medical board, so that the proper qualifications may be judged by men of approved education and training in the general science which deals with the ills of the human body. But I know of no special branch of medical practice which is itself split up as is proposed here. All other special branches are complete in themselves, and no one is permitted to engage in them unless he is qualified to diagnose and deal with cases in all the aspects they may present. One who is not skilled in optical surgery and medicine surely cannot be safely trusted to tell whether these are not required instead of the mechanical treatment he is able to give, and the time lost in discovering the need of these will often make resort to them useless.

Schools Not Adequate. — Schools of optometry are mentioned in the bill, but it is shown by the evidence presented to me that such as there are generally, if not always, lack the requirements of proper education for so important an art as treating the human eye. Many of them are mere correspondence schools.

It is quite true that dealing with vision ought to be strictly regulated, because, to common knowledge, much harm is done by itinerant and other persons who profess to supply the needs of the People. But I do not think this bill furnishes the proper means of regulation. On the contrary, by giving the authority of the state, many who lack the proper education and training, as this bill would, in my judgment, do, the public would be misled as to their qualifications. Those so lacking would undoubtedly outnumber those who merely by special talent and practice would acquire a certain proficiency, as men do in all callings. Druggists often gain a knowledge of disease and their remedies as extensive as some physicians have, yet they are not permitted to apply that knowledge in practice, because such cases are exceptional.

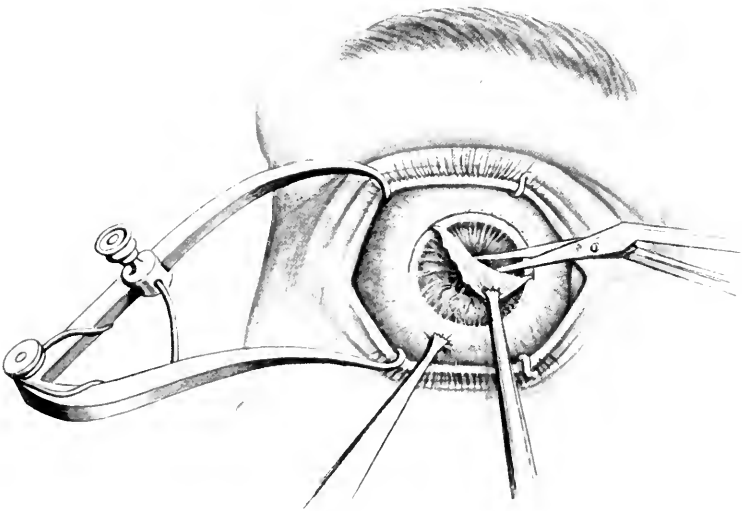
For this reason I herewith file the bill with the secretary of state, unapproved.

JUDSON HARMON,

May 17, 1910.

Governor.





COMPLETE PANNUS DISSECTION.

# THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS  
OF OPHTHALMOLOGY

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## THE OPERATION OF PANNUS DISSECTION.

By T. A. DICKSON, M. D.

MOBILE, ALA.

(Illustrated)

For a great many years we have been groping in the dark, seeking remedies for the cure of the severer forms of that symptom known as pannus. I believe that ophthalmologists generally will approve of any procedure that relieves these sad cases. It is my desire to place before the profession an operation for fleshy pannus that I devised several years ago, after allowing sufficient time to elapse so that I can feel it to be of permanent value.

I do not refer to those milder forms of pannus, that usually disappear after proper treatment of the trachoma that set them up, but to the chronic cases associated with a thick, vascular epicoeal growth. I can call to mind, in past years of work, many such pitiable cases, who had gone from clinic to clinic, from specialist to specialist, with their prospects for vision and relief of discomfort unchanged. It is an old story, but extremely pathetic. It is of these cases that I wish to speak—these that are regarded as practically incurable, notwithstanding the employment of the much-lauded jequirity, peritomy, canthotomy, pus inoculation, etc.

Jequirity has been used by some successfully, but as a remedy for all cases, partial and complete, I can only condemn it as unscientific and dangerous.

Although peritomy has been used by some of the leading men of this country with varying success, the clipping of the blood vessels only tends to give the patient more pain and makes the following operation, which I style "pannus dissection," more difficult. Pannus dissection is the operation I have followed for five years and it has given me excellent results. This operation is performed as follows: The eye is thoroughly cleansed by irrigating the sac with a saturated solution of boric acid, followed by a 10 per cent

cocaine solution with a 1-1000 adrenalin solution. Then, waiting a sufficient time for the local anesthetic to have effect, the speculum is introduced. Opening wide the lid, the eyeball is seized by an assistant in the lower portion of the conjunctiva with fixation forceps, thus rendering the eye immovable.

Beginning at the sclero-corneal junction 3 to 5 mm. from the corneal margin, I make an incision through the conjunctiva down to the sclera, just as one would in doing a peritomy.

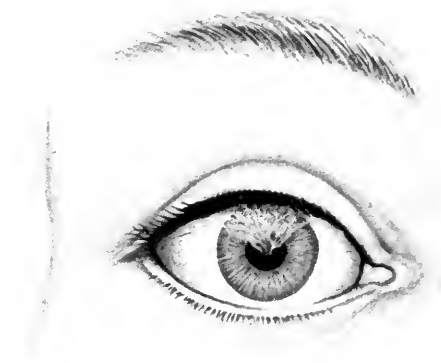
I begin my dissection by "rolling over" the flap after the peritomy incision, paying particular attention to the effort to get well under all the blood vessels and next to the corneal tissues. I use for this purpose a pair of iris scissors and broad forceps that will not tear, but that at the same time will hold securely the flap containing the vessels that are to be dissected from the eyeball.

Stretching the flap one can readily see a light space following the iris scissors as one makes the dissection. This tissue, in cases where there has been no ulcer, can be dissected evenly and smoothly; where there have been ulcers there will also be considerable adhesion to the corneal tissue and it will be difficult to separate the pannus from the cornea. In these cases I dissect well around the ulcer sites, leaving these points to be afterwards smoothly trimmed with a cataract knife.

The pannus that is thickest and seems to be the worst will dissect easier than the thin ones, and, in many cases, one will have a clear cornea, giving the patient almost at once a vision of 6/12, when, of course, there is no posterior disease.

The subsequent treatment is usually simple: a saturated solution of boracic acid as a douche two or three times daily with cold compresses of the same solution kept over the eye for the first two or three days. If there is any tendency to iritis proper treatment should be instituted. In from two to three weeks the cornea will, as a rule, be found to be more or less transparent. In correcting the refractive errors in these cases I have, after the operation, generally found considerable astigmatism.

I desire to report two cases as typical of the claims I make for pannus dissection. One was a case with thick pannus of ten years duration without any ulcers; the other a complete pannus with frequent ulcers and a year's duration.



PARTIAL PANNUS.





Case 1. Mrs. B. came to my office two years ago and requested me to remove her left eye, stating that she had suffered for ten years with what had been reported as an incurable disease by many specialists. This varied experience was due, probably, to the fact that her husband being in the employ of the Bell Telephone Company, moved from city to city, following his occupation. In these different cities Mrs. B. stated that she had been variously treated for the cure of her trachoma and pannus, one surgeon treating her as long as two years and six months.

I found the affected eye much inflamed; the pupil could not be seen and the color of the iris could not be made out, since a pannus completely covered the cornea. As on palpation the tension was normal, I decided she probably had an attack of iritis and instituted treatment for it.

It took considerable persuasion to divert her from her original purpose of having the eye removed. I explained that I could use an electrolytic treatment for her trachoma, after I had arrested the present acute inflammation. She consented and after three or four weeks the eye was in condition to use the copper electrolysis. The lid surface finally became smooth, with a favorable condition for a pannus dissection, which I did in the manner described, leaving clear corneal tissue with a view of the pupil and iris.

I might mention that in this case a peritomy had been performed by two different surgeons without any beneficial result, but leaving me a little more difficult task on account of adhesions near the limbus. The surgeon who treated her for two years and six months had done a canthotomy with the hope of relieving the pressure exerted by the swollen, roughened lid on the corneal tissue, thereby hoping to do away with her rapidly developing and thickening pannus. Five months after I had operated on her she was fitted with glasses, the right eye presenting myopic astigmatism; the left eye, with nearly the same glass, gave her a vision of 6/12.

Case 2. Mrs. G., a woman 20 years of age, had trachoma, as did all the family, including mother, sister and two brothers. She had been treated by several specialists, one of whom had applied the curette to the pannus itself, probably aggravating the condition. When the case first came under my observation there were several corneal ulcers present, a marked pannus and well developed trachoma. Dionin for some time relieved the ulcers, afterwards the

eye was in condition for the use of copper electrolysis. Finally, I decided that the eye was in condition for a pannus dissection. After using boracic acid irrigation, cocaine drops, and adrenalin solution I proceeded with the operation.

In this case the ulcers had formed more to the right of the corneal center, giving a better chance after the dissection for a clear pupil. I had considerable difficulty in starting the dissection on account of adhesions; also the vascular growth was fragile, but by being extremely careful the pannus was dissected fairly well over the entire cornea. Where the ulcers had been there was, of course, scar tissue which was not dissected at all; this portion of the cornea was smoothed over with a cataract knife. This after-treatment was the same as in the other case, giving a fair result, as the patient can now read ordinary book type clearly.

This case also developed an iritis after her dissection which disappeared in about three weeks. At this time, six months after operation and treatment, the patient is doing nicely.

I have investigated the literature of this subject so far as it is accessible to me and can find nothing relating to an operation in which the pannus is dissected from the cornea, so I believe I can truly claim it as an original operation.

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## A THEORY OF THE ETIOLOGY, PREVENTION, TREATMENT AND CURE OF TRACHOMA.

By FRANK B. EATON, M. D.,

PORTLAND, OREGON.

### SECOND PAPER.

In the September, 1908, issue of the *OPHTHALMIC RECORD* appeared a preliminary report under the above title in the form of ten theorems. The writer therein stated that "some of them (the theorems) I have the proof of in my records of cases of trachoma going back as far as the year 1882."

It would be logical to take up these theorems in numerical order, but as this would conflict with the presentation of a consecutive narrative of the experiences and observations which led to my conclusions, this first presentation of the subject in this paper is in quasi narrative form.

Furthermore, while it is desirable and in conformity with the

exactions of modern bacteriology, first of all, perhaps, to demonstrate the existence in the blood and tissues of the protozoa which I believe are the cause of the disease, such a demonstration is not necessary to convince fair-minded scientific men.

There are notable precedents in the history of medicine justifying the acceptance of medical theory on clinical grounds only, viz., vaccination, syphilis, etc. Indeed, a strict adherence to the laboratory traditions which now appear to rule so-called scientific medicine has not only distinct disadvantages but also inevitable limitations. Far richer in practical results is, and has been, the method of Sydenham, commonly called the clinical method.

"The great deductions of medicine which have helped humanity and relieved distress have come," says Dr. Bayard Holmes, "not through the laboratory, but through the clinical method, and in the future the great progress which will bring medicine up to a higher plateau of usefulness will come through deductions from foundation detail well learned in the laboratory, and a horizon of experience taken from the world's treasure house of medical knowledge. \* \* \* Only in the immediate need of a suffering fellow-man is a sufficient motive presented to arouse the inspiration of rational deduction."

The writer's first studies of trachoma were incidental to the ordinary routine of practice, and became more concrete in connection with the investigation undertaken by a committee appointed by the French Ophthalmological Society in 1894 to discover, if possible, the cause of the disease.

In the prosecution of this investigation the states of Oregon, Washington and Idaho were, at the request of the late Dr. Swan Burnett of Washington, D. C., apportioned to the writer, whose report was made through Dr. Burnett to the chairman of the French committee, Dr. Chibret of Paris.<sup>1</sup> The principal views and facts incorporated in this report are briefly as follows:

By Chibret:

"Swan Burnett and Chibret found that trachoma is not observed in the geographical area occupied by the Celtic race.<sup>2</sup>

"Chibret believes spring catarrh to be an attenuated trachoma."

"The immunity of the American negro is not absolute; it is relative, as among the Celts."

"Dr. Foucher of Montreal and six specialists (oculists) consulted by him have not observed a single case of trachoma among the Indians of Canada. \* \* \* and meanwhile the savages live in conditions favorable otherwise to receptivity: insufficient nourishment, lazy and slovenly, smoke, syphilis, tuberculosis and eruptive affections decimate them. \* \* \* It is not the possibility of contagion which is wanting: in Manitoba the Crees and Santeux live side by side with the Russian Mennonites, in the same scorn of hygiene. The Mennonites are ravaged by trachoma, and a great many of them are blind from this affection, while the Crees and Santeux remain secure."

The Indians of the United States, according to Chibret, *do* have trachoma.

But, "The Indians of Pennsylvania are of a different race from those of the other Indians of Northern America."

Chibret, therefore, reaches three conclusions:

1. The absolute immunity of the Canadian Indians.
2. The relative immunity of the American negroes.
3. The relative immunity of the Celtic race.

"The contagion is only observed frequently in regions where the population is strongly receptive, and where the virulence is increased by this receptivity. It becomes rare in populations which are relatively immune and where the virulence is feeble." (*Bulletins et Memoires de la Société Française d'Ophthalmologie*, Vol. 11, 1896.)

Sattler in an article on the verification of what he termed "the law established by Chibret concerning the immunity given by a high altitude," concluded that a certain elevation above the sea affords the best conditions for cure, but that there is no absolute immunity.

A Mexican observer, Chacon, corroborated Chibret by stating "the fact that in the City of Mexico, where the hygienic condition of the poor is of the very worst," trachoma is very rare, the altitude of the city being 6,000 feet. But he emphatically asserts that "race has nothing to do with the question, as there are many foreigners living in the city who are alike free from any visitation of the inflammation."

As to my own report rendered to Chibret in 1894,<sup>5</sup> I will quote

from it but very briefly, as its closing sentence only has a particular bearing upon the theory I herein attempt to prove.

"The affected population is American, German, Irish, Norwegian, Jew, Italian and Chinese, in the order given. The negroes (pure and mulatto) do not exceed 2,000 or 3,000 in the city. Population, 86,000. In twenty years of practice I have not observed a case of trachoma in the negro race, pure or not. As to the other races,

Cases of trachoma, P. Cent

Total number of Americans, 141.....	22	15.27
Total number of Germans, 32.....	2	6.20
Total number of Irish, 12.....	1	8.26
Total number of Jews, 6.....	1	16
Total number of Scandinavians, 8.....	1	12
Total number of Italians, 3.....	0	0

The above are the cases of the only period which I have had time to go over in the short time which you have given me, nor are my hospital cases included, for I have not recorded the latter. Trachoma in the city is relatively most frequent among the Chinese, who number about 4,000 or 5,000. \* \* \* I have not recorded my Chinese cases, but proportionally I have observed many. Summer increases the cases and the virulence of the disease; altitude diminishes it,—*i. e.*, east of the mountains (Cascade Range). I have no proof of direct transmission by contagion. I do not remember to have ever seen two persons of the same family affected with it.

The only occupations which I have found to favor trachoma are those of farmers, cattlemen and *stablemen*. *These last seem to be the most affected.*"

The last sentence, which was not originally underscored in 1894, is the one to which I refer above.

It was the principal item commented upon by Chibret in reviewing the report, but at the time it seemed to me to have no important bearing on the etiology.

The whole matter passed out of my mind until the year 1903, when I was practicing in San Francisco and residing in Berkeley, across the bay. During the summer, being ill though not confined to the house, one of my relatives living at the Presidio of Monterey,

where the 25th U. S. Infantry (colored) was then stationed, visited me and complained of having been *bitten* upon one lower eyelid margin by a fly. At this point was a moderate circumscribed swelling, including not only the muco-integumentary junction, but mainly involving the conjunctiva for a distance of about four millimetres from the lid margin as a nodular, red, flattish swelling. As I now remember, the bite occurred some two weeks or more before I saw it, and there was no evidence of involvement of the Meibomian glands.

I at once said to my patient, a very intelligent lady, that the condition appeared to be trachoma, and asked what kind of a fly it was that had made the bite. The reply was that the fly just before the patient was bitten, had been buzzing about a horse patient was driving, and she knew the very moment she was bitten, but the swelling had given no pain, but was unsightly. The statement of a fly-bite puzzled me, for I could not mistake. I thought, the trachomatous nature of the nodules, which were oval, not round. However, I touched it with a point of copper sulphate and advised the lady to ask the post surgeon to repeat it (she is the wife of an officer), which I think was done, and in about a week or two (estimated) it disappeared.

In talking with this lady and discussing the incidents, for she had more than once given me assistance in scientific research, the words of Chibret in regard to my observation anent the stablemen (*Cécurières*) suddenly recurred to me, and I told her that here, perhaps, was a starting clew to the etiology of trachoma. She then told me of other observations she had made, to which I may later refer.

Following this incident, while convalescing in a country sanitarium I diverted my mind by questioning those who I thought might have been where the disease existed. Among these was an Arizona ex-ranchman who had seen much trachoma in that territory. He assured me that it was especially prevalent among the cowboys and cattlemen, and tried to describe to me one kind of horse-fly in particular, which was a pest not only to the horses, but their owners.

Returning to San Francisco and my practice, my opportunities for pursuing my few ideas appeared about hopeless; I realized that

I was face to face with a long arduous task, with no visible means of accomplishing it either pecuniarily or clinically, for trachoma is relatively uncommon in San Francisco and its immediate vicinity.

However, while assisting my friend Dr. W. A. Martin at his clinic in the San Francisco Polyclinic, it fell to my lot to first examine the eyes of a Syrian boy lately arrived from Jerusalem, and who had a chronic trachoma of both eyes. He spoke English fairly well and told me that nearly everyone in his family had contracted the disease, this including his mother and several brothers and sisters. Without mentioning flies, I asked him how the disease was spread from person to person. To this he replied if I remember rightly, that he did not know. I asked if there were any flies in Palestine; he said, yes. What kind; like ours? No; they *bite* the eye-lids and face, and are like the gnats in America.

I do not recall having mentioned my investigations to anyone at this time except Dr. Wm. Ophuls, professor of pathology in Cooper Medical College, San Francisco (now medical department of Stanford university).

During the San Francisco disaster in 1906, among the very few things I saved, were my four volumes of records of all my cases from 1883 to 1906, and in these, are recorded many cases of trachoma covering that period, with age, date, residence, etc. This has enabled me to trace and follow up a large number of patients, to determine their environment at the time they acquired trachoma, trace, more or less, the sources of infection, and the very first cases so traced were on a milk ranch close to this city, where in one house were three cases, and these isolated ones.

Before proceeding to consider the theorems *serialim*, (OPHTHALMIC RECORD, Sept. 1908,) it seems expedient to briefly take into account SOME OF THE CLINICAL FEATURES OF TRACHOMA *which have so far retarded, not to say rendered futile the efforts, extending over many years, of numerous observers to determine the etiology of this ancient disease; a disease, indeed, of such antiquity, that one must turn to the pages of the Pentateuch to adequately trace its origin. Moreover, we are considering a disease which, in this twentieth century of progress, it is authoritatively stated, afflicts 95% of the children of the government schools of Egypt.*<sup>6</sup>

The first confusing clinical feature of trachoma in the past has been, of course, the presence so often in its early stage of a *mixed infection*. Going back no further than the year 1868, we find the German ophthalmologists (for instance, Stellwag von Carron)<sup>7</sup> describing trachoma as the result of blenorrhoea conjunctivae<sup>8</sup> or purulent ophthalmia; and still earlier (1830 to 1860) the disease had no existence nosologically and was in no way distinguished from what was termed generically, *ophthalmia*.

Later, in 1868, we find J. Soelberg Wells<sup>9</sup> referring to the etiology of "Acute Granular Ophthalmia," writing thus: "Contagion is a very frequent cause, for the discharge from an eye affected with acute granulations is very contagious, more especially during the muco-purulent stage (sic.). *It does not necessarily produce the same affection*, but like purulent, or even diphtheritic ophthalmia, may give rise to catarrhal, purulent, or diphtheritic conjunctivitis."

Further on, hinting at the etiology of what he termed "Chronic Granulations," he states that, "It has been maintained by some ophthalmic surgeons of eminence (more especially Arlt), that the disease is often due to constitutional causes, particularly scrofula." And finally, as if in unconscious prevision of my own contention that trachoma is primarily an infection of the *blood* (Theorem I.), he goes on to state: "But ill health is, I think, rather the effect than the cause, for the protracted course of the disease is sure to tell more or less severely upon the health of the patient."

Again, like the early German writers, he confuses trachoma as a resultant or end product of other conjunctival diseases when he remarks that, "The muco-purulent discharge is very contagious, and may re-produce a similar affection, or it may cause catarrhal, purulent or even diphtheritic ophthalmia, *just as, conversely, these diseases may produce granular lids*,"<sup>10</sup> (Italics mine.)

A second clinical error or misinterpretation which, in modern times at least, has prevented even a suspicion that the disease is primarily a blood infection, has been that the anemia, debility, and mental dullness (lethargy) and depression so familiar to all experienced oculists as characteristics of the sub-acute and chronic trachoma, have been so generally attributed (by myself for years) to the photophobia and confinement indoors in enforced idleness,



There is, as I will further on prove, invariably more or less *cachexia* in the chronic form of the disease when it is at all severe. (Theorem VI.; Proposition I.)

It is this that has been most of all misinterpreted.

Still another, and perhaps the chief confusing feature, has been one of local mis-interpretation of the pathological pictures portrayed upon the conjunctival canvas, with all the varied patterns of color and design. So-called follicular conjunctivitis has been permitted to parade as a histological entity, and the long and famous controversy as to whether it is or not one of the stages of trachoma is still being waged. At the present time the consensus of opinion favors its existence as a separate disease, or as a passing congestion almost physiological.

But the findings of A. Schiele<sup>10</sup> appear to me and many others to have established as a fact for all time, (by logical inference), that follicular conjunctivitis is *the early, oft locally-curable, stage of trachoma*. He found that on instilling tuberculin (Calmette) into the conjunctival sac, that, even in the first twenty-four hours following, the follicles became turgescant and this was accompanied by a more or less severe catarrhal condition of the conjunctiva. On the following days, the symptoms were intensified and new follicles appeared, even on the bulbar conjunctiva. The picture then becomes one of an acute or subacute trachoma. No such reaction takes place in chalazias, hordeola, pterygea, keratitis parenchymatosa luetica, etc. "Follicular catarrh," he found "*reacts like trachoma, thus proving the identity of the conditions.*" (Italics mine.)

It seems, therefore, to Schiele that there is a relationship between trachoma and tuberculosis, "just as the pathologic pictures of the two have much in common." In all cases of healthy individuals with healthy eyes, the result was always negative. Schiele states unequivocally that, "The positive ophthalmic-reaction in a case of conjunctivitis proves its trachomatous nature."

I go further than this in view of the fact that the ophthalmic-reaction is a contact of horse serum, and conclude from the evidence furnished by my own researches, that the reaction of the conjunctiva in the absence or perhaps presence of systemic tuberculosis, *is due to the presence in the blood of some toxic substance which is the main, if not the sole factor in bringing about the local*

*reaction.* For, while Schiele found that cases of trachoma treated or cured by the hydriodic acid stick do not react to the tuberculin test, Rahelman<sup>11</sup> observed constantly in the trachomatous secretion, in which there are always to be seen some bacteria, protoplasmic particles, movable and active.

(To be continued.)

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### AN UNUSUAL CASE OF VOSSIUS' LENS-RING.

H. GIFFORD, M. D.

OMAHA, NEBRASKA.

The ring-shaped opacity of the crystalline lens described by Vossius in 1906 was said by him to be a ring about 3 mm. in diameter, visible in the anterior capsule after some contusions of the eyeball, which, as a rule, could only be seen after dilating the pupil and examining the eye with a strong convex lens. In two of his cases the ring had a brownish color, and could be seen with oblique illumination, while in the other four, the ring could be seen only with transmitted light. In these four also the ring could be seen to be made up of numerous fine dots. The ring, in all cases, disappeared completely in the course of four weeks, leaving normal vision in all uncomplicated cases. Vossius thought that the opacity was due to the pupillary margin of the iris being pressed against the lens by the cornea; the brown color, where present,

resulting from iris-pigment being left on the lens; while the other opacities were the result of degenerative changes in the capsular epithelium, analogous to the experimental contusion-cataract described by Schirmer (which also disappeared completely). Following Vossius, several other cases were reported in Germany, and in *Ophthalmology*.<sup>\*</sup> January 1, 1909, I reported two cases, in one of which there could be observed a phenomenon which I had not seen described; namely, the occurrence of numerous fine opacities all through the anterior surface of the lens, both inside and outside the ring. Caspar (*Klinische Monatsblätter f. Augheilk.*, October, 1907, p. 425), before this, had reported a case in which the lens-opacity instead of being a simple ring could be seen, on strong magnification, to be really a circular area made up of fine spots more closely crowded together at the circumference so as to give, at first sight, the appearance of a ring enclosing a clear space. I find also that Löblein (*Zeitschrift f. Augheilk.*, XX, 1908, p. 364), whose article I had not seen when my report was written, in describing the twelfth reported case of this kind says: "Peripherally, especially also centerwards from the ring of opacity, the lens-surface appears very slightly opaque so that really there is present a disk-formed opacity with ring-shaped accentuation." Later Hoeg (*Kb. f. Aug.*, June, 1909, 595), reported a case in which the area within the ring showed a scarcely perceptible diffuse opacity, while toward the lower periphery of the lens there were several radial opacities which disappeared in a few days. In this paper, which contains the best résumé of the subject and literature, Hoeg points out that the original supposition of Vossius (which had been accepted by all other writers), that the opacity was caused by the cornea being pushed in so as to actually come into contact with the iris, is certainly incorrect, for the majority of cases at least. He argues that the displacement of the aqueous necessary to permit the lens and cornea to suddenly be brought together for an area of 3 mm. in diameter could not possibly be brought about without rupture of the iris or cornea; that for the production of the regular central ring by pressure of the cornea on the lens, the force would have to be applied just in the center; the body applying the force would have to be very small, to be able to

<sup>\*</sup> In this article a misprint gives the diameter of the ring in one case as 1.32 inch instead of 3.32.

bring the cornea into contact with the lens at all; and if this were possible the result would be a small opacity denser in the center than at the periphery. As opposed to these hypothetical requirements of Vossius' theory we find the facts to be that the ring is generally produced without rupture of the cornea or iris, by bodies of the greatest variety of sizes, from steel chips to hats and foot-balls, striking the eye from various directions. Hoeg's conclusion is that in place of the ring being produced by the cornea being pressed back against the iris and lens, it is simply the sudden elevation of the pressure in the anterior chamber which presses the iris against the lens with sufficient force to produce the ring. This theory would not be inconsistent with the application of the force from any angle and by foreign bodies of a variety of sizes and shapes.

Caspar (*ibid.*) follows Hoeg's article with the report of the first case in which a markedly asymmetrical ring has been noted. In his case the iris was prolapsed into a wound of the cornea, and the opacity in the lens, instead of being circular, was egg-shaped with the small end of the ellipse toward the wound. This indicates that the pupil must have been deformed and the ring produced before the aqueous escaped, since the deformation due to the prolapse could not occur until the pressure was relaxed. In other words the case does not speak against Hoeg's theory.

I regret to say that in my first article I accepted Vossius' explanation of the phenomenon; but even if I had not seen Hoeg's conclusive arguments, I believe that the following case would have led me to seek for another explanation: On November 11, 1909, a boy of 11 years was brought to me because on the preceding evening a dynamite cap had exploded in his left hand and a fragment had injured the right eye. The examination showed several small wounds in the left side of the face and a non-penetrating wound of the inner limbus and adjacent conjunctiva of the right eye. The wound was a flat one about  $\frac{1}{8}$  inch in diameter, covered with grayish exudate. A corresponding area of the cornea was cloudy. There was a little blood in the chamber and the eye was so irritable that it was not carefully examined with the ophthalmoscope till the second day, when with the pupil fully dilated a ring-shaped opacity about 3 mm. in diameter could be seen in the center of the anterior surface of the lens. With a strong lens this ring

could be seen to be made up of fine points thickly crowded together and in addition innumerable fine opacities could be seen all through the anterior surface of the lens, clear out to the periphery, as well as within the ring. With oblique illumination nothing could be seen of the ring or the other opacities. On November 29, when the boy was last seen, the ring showed decided signs of breaking up, but it could still be outlined and the fine dots in the rest of the lens could be seen also. Except for this and a stringy opacity in the vitreous the eye was normal; V. with correction, = 20/30 +.

Here was a typical case of Vossius' ring resulting from the glancing blow of a small piece of copper at the inner periphery of the anterior chamber; an injury which could not possibly have pressed the center of the cornea against the iris. Hence for this case Vossius' explanation does not hold, and if the simple elevation of the pressure in the chamber was sufficient to produce the opacities in the lens, there is good reason for applying the same explanation to the other cases, in all of which, as pointed out by Hoeg, it is so difficult to understand how the cornea could have been pushed in far enough to touch the iris or lens. The occurrence of the opacities in the lens-surface outside the ring can be accounted for, as in the case of the ring, by the pressure of the iris; but how to account for the opacities within the ring is a more difficult problem, which I have not seen considered by any of the writers on the subject. In default of something better, I suppose we must attribute them either simply to the sudden increased pressure of the aqueous, or to a disturbance of nutrition, which the ring itself produces in the tissue within the ring.

A case, if possible, still more convincing than my own of the correctness of Hoegg's theory is that of Steiner (*Klinische Monatsblätter für Augenheilk.*, January, 1910, p. 60) in which a typical lens-ring was observed after a shot in the temporal region, the bullet having passed into the orbit behind the eye; the latter not having been directly injured, but simply compressed suddenly from behind.

## DEMONSTRATION OF AN HEMIANOPIC PRISM PHENOMENA OF WILBRAND.

By DR. ALFRED SAENGER.

HAMBURG, GERMANY.

It is possible to differentiate between hemianopsia due to disease of the tractus opticus and of the cortex. Wernicke's reaction in hemianopsia is not always easy of determination on account of dispersion of light in the eye. The macula is irritated and reaction of the pupil appears in consequence.

The Wilbrand method is best described as follows:

The patient is requested to fix a white point on a large black surface and direct his attention to it. In this way all other impressions on the retina are excluded. The patient takes his seat at a distance of 30 to 50 centimeters, immediately in front of the white point. Suddenly two prisms of equal degree are brought before both eyes, the apex turned towards the hemianopic defect. In this manner the white point is directed towards that side of the retina which is not perceptive. These bases of the prisms must be parallel.

If a cortical hemianopsia exists the patient will quickly change the direction of sight and move the eyes until the fovea is directed to the object. This proves that there exists a reflex independent of the cerebrum, and on the opposite side, that the optical route between the retina and corpus geniculatum laterale is free. If the disease is situated in the tractus opticus the eyes make no movement to fix the object, but remain quiet.

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## LARGE PIECE OF WOOD EMBEDDED DEEPLY IN ORBIT OF CHILD TWENTY-FIVE MONTHS REMOVED WITH PRESERVATION OF VISION.

C. A. VEASEY, M. D.,

SPOKANE, WASHINGTON.

In October, 1907, A. P., a two-year-old baby, fell and injured his right eye. No one was with him at the time, and how it was injured or by what was not known. He was discovered crying and saying, "Stick, stick!" but that was all that could be ascertained. A small spot of ecchymosis was observed beneath the ocular conjunctiva, and the child was taken to an ophthalmic surgeon. As there seemed to be only a small conjunctival wound and no

definite history of the method of injury only a cleansing lotion was ordered. The wound healed, according to the father, in a short time.

Twenty-five months later the patient, now four years of age, was brought for advice because of a muco-purulent discharge that had been present in the formerly injured eye for several months. During the few weeks immediately preceding his visit the discharge had become much worse. An examination of the eye showed the conjunctiva to be in a healthy condition. To the nasal side of the cornea about 5 mm. from the limbus there was a small opening in the conjunctiva from which discharge was oozing. Believing that in all probability a foreign body had penetrated the orbital tissues and that the discharge was emanating from a sinus thus created, the child was anaesthetized for exploration and whatever operative procedure might be found necessary. When the opening in the ocular conjunctiva was slightly enlarged it was discovered that the internal rectus muscle had been entirely severed from its attachment to the eyeball and had become embedded in a mass of tissue adherent to the nasal wall of the orbit. An outer pocket had been formed with the eyeball on one side, the severed internal rectus and a mass of conjunctival tissue on the other, and conjunctiva above and below which communicated with the deeper orbital tissues by means of a very small sinus. Enlarging this opening and proceeding backward we discovered a more or less pointed piece of wood which was removed with some difficulty by means of a pair of homostatic forceps. It was found to be  $2\frac{1}{2}$  cm. in length, the larger end being about  $3\frac{1}{2}$  mm. by  $2\frac{1}{2}$  mm., the pointed end somewhat smaller, and in as much as the anterior end of the stick was approximately as deep in the orbit as the posterior portion of the eyeball and it pointed straight backward, the posterior end must have been very near to the sphenoidal fissure. The wound was closed and firm, primary union took place in a few days. The optic nerve at no time showed an involvement, though the foreign body had been lying in proximity to it for twenty-five months.

The case is of much interest because of the age of the patient, the size and shape of the foreign body, the length of time it remained embedded in the orbital tissues, the small amount of damage, the successful removal and primary healing.

## Reports of Societies

### CHICAGO OPHTHALMOLOGICAL SOCIETY.

Meeting of April 18, 1910.

DR. W. A. FISHER, President, in the Chair.

**The Inter-Capsular Cataract Operation** as performed at Jullunder, India.

Dr. D. W. Greene of Dayton, Ohio, addressed the Society on the above subject. The chief points in the lecture were as follows:

At Jullunder there are three operating-tables and two sets of operating instruments in constant use. While one is being used the other is in the sterilizer. A silver speculum, without a stop screw, is inserted. The outer one-third of the eyelashes are clipped off as closely as possible, so that the knife will not touch them, then the end or heel of the speculum is caught with the fingers and the lids are lifted away from the globe so as to completely expose the whole conjunctival sac, which is then flushed with 1 to 2 ounces of 1 to 3,000 bi-chloride solution; whatever remains is milked out (Smith calls it) by pressing down the outer angle with the thumb. The eye is then grasped at the lower corneal border, with strong mouse-tooth fixation forceps which take a deep hold, and the eye, if small, is lifted from the depth of the orbit (this is easily done if the patient does not resist) and turned outward so that the knife in its sweep across the anterior chamber shall not prick the nose when the counter puncture is made, but rather go over its bridge. The blade of the knife for this section should not be less than  $1\frac{1}{8}$  inches long, and  $1\frac{1}{4}$  inches is better. It should be entered well back in the sclero-corneal junction, so that the section shall equal one-half of the circumference of the cornea. *This size of the section cannot be too much emphasized.* Entering the knife at an angle of about 20 degrees above the horizontal plane; in this position almost any knife will ride over the iris without picking it up, and the counter puncture can be made well back in the angle. As soon as the point of the knife emerges, if the eyeball is in proper position, the hand should be slightly lowered, and the knife passed through to its heel, the inclination of the blade should be changed, so that the section shall be completed two millimeters within the cornea. This section should be a smooth and curved one, every



plane parallel to every other plane. There will be no stairsteps such as result when the sawing motion is made. Primary union is the rule. Before the germs of infection can develop, the wound is closed. To this section the speaker believed the wonderful results at Jullundur were largely due. Dr. Greene thinks much of Smith's success is also due to the marvelous skill with which he can make this section, *with marked uniformity*, and deliver the lens without much pressure or bruising. He has not seen his equal in this or any other steps of cataract operating.

The iridectomy is the next important step. In an experience of 150 operations, before going to India, Dr. Greene became convinced that it should be made as small as possible. He takes a small hold of the iris and cuts it off at a right angle to the section, that is, cutting from below upward with the scissors, and not cutting it parallel with the section. A small iridectomy will permit the necessary drainage, and the pillars are not so apt to become entangled or prolapsed as when it is made larger; another reason for making it small, is the tendency of the vitreous in certain cases and in certain nervous patients to balloon up and crowd the pillars apart and sometimes make the small iridectomy too large to look well, and, lastly, the toilette will be much easier to make and the resulting coloboma much nearer the ideal keyhole shape.

The speculum is now removed and the assistant inserts the large hook under the upper lid and elevates and draws it outward in line with the axis of the orbit. The second, third and little finger should press on the orbital ridge to help control the muscle, and with the left thumb he should pull down the lower lid.

The delivery of the lens in its capsule is the beginning, middle and end aim of the Smith operation; all other steps are preparatory to it, because whatever of merit it has and whatever place the future shall assign to it among cataract operations, must ever hinge on delivery of the lens in the unopened capsule with a minimum of trauma. While the size of the section is all important because a large lens cannot be crowded through a small opening without danger of rupturing the capsule and bruising the parts, the size of iridectomy also has much to do with the after appearance of the coloboma. The speaker was convinced that the amount and direction of the pressure used to deliver the lens is of more vital importance, if possible, to the success of the operation than

the size of the section. The section can be described so that anyone may imitate it, and make it large enough, but it is not possible to describe the amount and direction of the pressure necessary for the delivery of the lens, to one who has not seen it done. Sections will vary in size. Lenses vary and act differently in delivery. The strength of the zonula cannot be foretold. The escape of the aqueous often reveals a low tension of the globe that was not anticipated. All these are complications which no description can properly describe, but the harm which may result from any of them, experience and skill obviate. To deliver an immature lens requires one kind and direction of pressure, to deliver an intumescent or a hypermature cataract requires an entirely different kind and direction of pressure. These manipulations are purely matters of technique, which can only be learned by seeing a large number of operations performed by one skilled in the method and then performing a large number of operations under his direction.. The next important step is the toilette, which is of even greater importance to the future well-being and appearance of the eye than the toilette after the regular combined operation. The lens in its capsule is usually a much larger body than the same lens would be with its capsule and peri-nuclear layers or soft cortex left behind or pressed out ahead of the nucleus. Hence, there is usually more crowding of iris pillars into the angles of the section. This must be replaced if possible and a small coloboma secured. Nothing except loss of vitreous should be allowed to defeat this purpose. During the delivery of the lens and completing the toilette the patient must look well up. This is the position the eyes take in sleep. There is muscular relaxation and freedom from compression from the globe. Without attempting to be exact, the speaker suggested that he had seen as much loss of vitreous from the patient violating this injunction, as from all the manipulations. Major Smith's teaching on this point alone is worth the trip to Jullundur. Dr. Greene thinks that any operator who will try this plan will be convinced of its superiority over old time methods of having the patient look down while the lens is being delivered and the toilette made.

The steps of the toilette have lately been greatly improved at Jullundur. The speaker has recently written an article on this subject in the *OPHTHALMIC RECORD* of February, 1910.

As to the assistant, no man can do justice to the operation or

to himself with an assistant who is untrained or unskilled. His duties are different from those of the operator, but they are not less important to the success of the operation. His duties may be briefly summed up. He must expose to view the whole operative field and take off all pressure from the eye-ball. While the after-treatment of patients operated by this method in India was very simple, practically *nil* it may be said, the same cannot be said of them in this country. For some reasons which are not clear to the speaker at this time, patients sometimes require considerable after-treatment. Inflammatory reactions are comparatively rare; therefore, it is very seldom indeed that patients complain of pain during convalescence, but their eyes become red. After the first dressing, the distinct tracery and pattern of the iris is maintained, showing its freedom from inflammation. In the vast majority of cases, the condition seems to be one of irritation rather than of inflammation. The closing of the section has usually been prompt and firm. The speaker did not know that cases of slow closure have been any more frequent than after the old operation where the wound has reopened from coughing, straining at stool, or striking the eye, and the iris may or may not become entangled or prolapsed and the convalescence be prolonged. Dr. Greene has not yet compiled statistics covering this point. The question of the evils which may follow a loss of vitreous (often one-third its volume), if one may judge from the literature on the subject and from personal experience, seems to have been exaggerated. Delayed healing of the section sometimes occurs, but the same is observed after the regular operations. In this connection the essayist had only been able to diagnose one case of detachment of the choroid in association with delayed healing, and that did no harm beyond the delay it seemed to cause.

The address was illustrated with lantern slides of the old and new hospital, patients, etc. The wards and immense verandas are a great feature in all oriental hospital buildings. There are as many beds on the verandas as in the wards. The operating rooms are as up-to-date as they can be in an oriental city of 15,000 people, where there are no water-works, sewers or other modern necessities. But the people have with great uniformity certain racial characteristics which probably have much to do with the success of the operation among them. It is rare indeed to see a native, male or female, if

an out-door laborer, who carries a pound of superfluous flesh. The men are all tall and lean and lank. The women are not so tall, but are lean and lank and ugly. Gout and rheumatism are rare. Their meagre vegetable diet probably has much to do in preventing these vices of civilization among them. These are the bane of cataract operating in this country. Syphilis was not often met with and the Hindus may be said to be temperate, and the Mohammed-contributing influence to complications during the healing process.

#### DISCUSSION.

Dr. Thomas Faith asked whether the retarded healing, which sometimes occurs, predisposed to infection. Dr. Greene replied that if the section was not smooth and the edges did not closely coapt so that healing by granulation took place, there was danger of infection, but no greater than after the regular operation. He saw only four cases of infection in about 1,200 operations. This small per cent he thought was largely due to the thorough flushing of the conjunctival sac, and to the smooth section, which closes before the germs of infection can develop.

Dr. Oscar Dodd asked whether immature cataracts are all extracted by turning them over. Dr. Greene said that the immature cataract seldom or never turns over. The only lens which will turn over in delivery is one with a small nucleus and mushy cortex, which permits of moulding itself to the hour-glass shape. These are the intumescent and hypermature. A totally sclerosed lens cannot do this and is too large to turn in the limited space within the eye.

Dr. A. H. Andrews asked whether the women in India have cataract. Dr. Greene replied that they did, but in much smaller proportion than the men. The Sikhs of the Punjab are magnificent specimens of physical manhood. They are the flower of the native army. They are tall, with plenty of bone and muscle, but do not carry a pound of superfluous flesh. The women, on the contrary, are small and ugly, and while they do work in the fields with the men, they are not so constantly exposed to the rays of the sun, as household duties require that they should be indoors a part of the time, and most of the women cover their faces a part of the time. No man, except the husband and the children, are supposed to ever see the face of the wife and mother; therefore, the women

do have a measure of protection from the glare of the sunlight, not enjoyed by the men.

Dr. Oliver Tydings asked as to the nature of the toilette after the operation. Dr. Greene stated in reply that owing to the poverty of the people, the city of Jullundur was unable to pay for absorbent cotton and sterilized gauze, but as India is a cotton growing country, the people furnish it to the hospital. It is sterilized in the hospital and used in that way. The first dressing was removed on the third or fourth day when we reached Jullundur, contrary to Smith's order, and occasionally wounds would spring open at that time because the dressers always asked the patients to look down. The vitreous may be present and the iris become entangled in doing this. He has seldom had this experience, as he leaves the bandage on for eight or ten days and asks the patient to look up in dressing the eye.

Dr. W. H. Wilder asked if both eyes are operated on at the same time. Dr. Greene replied that they are and that he has never seen any harm come from it. He had seen in two cases one eye lost from infection while the other did well.

Dr. Henry Gradle asked as to the use of atropine. Dr. Greene replied that it was used only in those cases where the capsule had ruptured. These are the cases in which inflammatory complications are so likely to occur.

Dr. Wilder asked as to whether any attempt is made to determine the degree of visual acuity after the operation. Dr. Greene replied that no attempt was made but all who wished it get a plus 10D for distance or a plus 14 or 16D for close work. Very few can read, so plus 10D is the glass that is usually given.

Dr. Willis O. Nance asked how the vision of the patients operated on in this country compared with that of patients operated on by the Major Smith method, and what was the degree of astigmatism following both methods. Dr. Greene replied that in India 80 per cent of the people have trachoma and one would not get good visual results when the cornea was cloudy. Many of these patients do not do as well, but that he did not know whether they differed much from patients operated on by other methods. In seventy-five cases reported on by him last year he got very much better vision, an average of 20-40, by the capsulotomy method, and 20-27 by the Smith method. The patients were nearly all old men, average age

67, inmates of the Soldiers' Home. The amount of astigmatism depends almost entirely on the incision. If the Smith incision is correctly made, there is a low degree of astigmatism. This incision must be made with a knife blade  $1\frac{1}{4}$  inches long; the regular von Graefe  $1\frac{1}{8}$  inch knife will do if it has not been sharpened too often. The incision must a clean, straight one, made by a bold push and not by a sawing motion. The edges of this section coapt and seal up quickly.

Dr. Nance suggested that it seems necessary to use considerable force with the hook on the cornea in order to express the lens, and that, therefore, abrasions or ulcers of the cornea might be apt to occur. Dr. Greene replied that he has never seen ulceration follow, although abrasion occurred formerly when the cornea was rubbed too much, but since he had learned the correct technic, he did not have it.

WILLIS O. NANCE, Secretary.

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Meeting of May 16, 1910.

The President, DR. W. A. FISHER, in the Chair.

### **Magnet Operation and Skiagrams.**

Dr. E. F. Snyder read a paper on this subject and exhibited some illustrative pictures.

Dr. L. R. Ryan of Galesburg recently had had two cases, where he felt positive there was a foreign body in the eye, but was unable to locate it. He had no means of making a skiagraph, but used the magnet without success. A physician in a large city made a skiagram, found and removed the foreign body. In the second case there was so much hemorrhage that it was impossible to locate the body. He followed the expectant plan of treatment for three or four weeks, and after the hemorrhage had been absorbed a piece of steel was located and removed. In this case the giant magnet did not work right. It was tested before the operation and seemed to be all right, but during the operation it failed. He found subsequently that one of the connecting wires had burned out. The foreign body was located in the retina above the iris, and it was drawn down to the lower and outer quadrant, where an incision was made and the foreign body extracted.

Dr. C. H. Beard thought that one point was exceptionally well taken, and that was that we are too apt to despair of saving some

of these eyes. A man was punching boiler plate with a punch of a diameter of five-eighths of an inch. It was poorly set in the machine and nearly half of the face of the punch broken off, penetrated the upper lid, entered the globe, tearing its way in and making an enormous opening. The steel was removed with the giant magnet nearly a year ago. The man has a satisfactory eyeball of normal tension, but has no vision. The eye is quiet, however, and the globe is of good shape and form.

Dr. Henry Gradle felt that the conclusions of Dr. Snodacker would be concurred in by all surgeons of experience. He had had a few experiences which do not come within the range of the paper, however, but were interesting in this connection. One of the cases illustrates the possibility of a small piece of iron remaining in the eye and ultimately disappearing by complete absorption, without causing siderosis. Toward the end of the seventies a man received a small chip in the eye, which entered the lens. The patient was seen a few days afterwards, and there was no reaction, and as knowledge of the magnet extraction was limited, Dr. Gradle concluded to do nothing. The object was absorbed. The eye was quiet for many years. Fifteen years later the man had sudden occlusion of the macular arteries of the other eye, making him totally blind for a time. There was a large central scotoma and a cataract was present in the injured eye. A dissection of the secondary cataract was made and almost normal vision obtained for the primarily injured eye. No siderosis was demonstrated nor could any foreign body be located with the ophthalmoscope. The small piece of iron in the lens had become completely absorbed. Recently another instance was met with where a small piece of iron remained in the eye about twenty years and escaped detection. It became absorbed, but caused considerable damage, perhaps directly, perhaps indirectly. The man complained of rather poor sight and some discomfort. On examination there was the appearance of a simple glaucoma, not very well pronounced. Excavation was not complete. The hardness was doubtful to the finger, but the pupil did not react. The iris appeared somewhat atrophic. The entrance wound of a small piece of iron could be demonstrated in the cornea and a corresponding rent in the iris near the periphery was seen. On looking obliquely into the eye under mydriasis a small piece of iron surrounded by a cloud-like mass in the choroid could be observed. There was no

siderosis. Vision was probably reduced, and the field of vision was more characteristic of simple glaucoma than of siderosis. The skiagraph showed nothing. The piece of iron or steel has been absorbed and the man is suffering from simple glaucoma following the lodgment of a foreign body in the choroid about twenty years ago.

Another patient was one whom Dr. Wood saw. It was a case in which Dr. Gradle was associated with Dr. Pinckard. A young man had his glasses broken and it was assumed that a large piece of the glass got into the eye. After a day or two of irritation the eye became perfectly quiet. Dr. Pinckard saw him two weeks before and the eye was free from irritation, the pupil freely dilatable under atropin. Vision was far from normal. In the eye there were recurrent retinal hemorrhages every day or two. The vitreous was clear, but there was something that looked suspicious of a foreign body. The skiagraph showed a very sharp outline of a somewhat comma-shaped object, not over one-quarter inch in height, and one or two millimeters in width.

After a few days we came to the conclusion that if a foreign body could not be excluded, the eye was too dangerous to remain, although it was free from inflammation. We opened the eye, went in with forceps but did not succeed in removing anything. The eye was then enucleated, and on opening it we found that about one-third of an ordinary spectacle glass was standing vertically in the vitreous in such a manner that the x-ray had taken a profile view, showing it as a comma-shaped object. The glass was fully more than one-half inch in length.

Dr. Snydacker, in closing, said that he had examined many pieces of steel under very high magnifying glasses. Removing a piece of steel is not a simple piece of work, because the steel is covered with little barbs. Sometimes it is studded with fish-hook-like projections, which attach themselves to the surrounding tissues when removing the object. He had read of many descriptions of drawing the foreign body forward through the small incision, but he has never been able to do that, especially when the steel had become encapsulated. Dr. Snydacker thought it was better not to withdraw the foreign-body through the original opening. It depends entirely on the location of the body and the possibility of injuring the lens and cilia during the withdrawal. It is better to draw the body into position, where an incision can be made safely, and the



object withdrawn. A skiagraph should be taken in every case regardless of the fact that the object has been located with the ophthalmoscope.

**Reports as to the Condition of the Cataract Cases Operated on by Dr. Greene.**

Dr. William A. Fisher reported that his case had done nicely in every way and that patient's vision was 20/20 with a plus 1.0D.

Dr. John R. Hoffman also reported on a case that Dr. Greene has operated on.

Dr. Willis O. Nance reported that in his case there had been considerable reaction following the operation and the healing of the corneal wound was slow. The eye is still red, although there is no indication, nor has there been, of iritis. The pupil is large and elliptical in form. There is a distinct membrane, probably remains of the zonule covering fully two-thirds of the pupillary space and corneal strias are visible. Vision is 20/120, and there is no improvement with glasses.

Dr. Nance had the eye dressed at the end of the forty-eight hours following the operation, believing that it is positively unsafe to leave an eye operated on for cataract unnoticed for six or seven days, as advised by some operators.

Dr. Clark W. Hawley reported on two cases, in which, except for some complications incident to meddlesomeness on the part of the patient, the progress had been very satisfactory. In one case, that of an old lady, vision is about 20/40. With a plus 4 or 5 she reads newspaper print. The interior of the eye is clear. The second patient, a man, has 6/36 vision, and his eye is clear.

Dr. H. W. Woodruff reported that his patient had had an injury, a piece of wood striking the eye eight years ago. The pupil was eccentric, and could not be dilated. The other eye was myopic and the seat of the diffuse choroiditis. At the time of operation a slight amount of vitreous was lost. The eye was tested rather frequently and the wound healed slowly. The anterior chamber did not reform for some time. The wound lips did not approximate well, so that at the present time there is a high degree of astigmatism. There is 20/30 vision with a plus 6, combined with a plus 6 cylinder.

Dr. W. H. Wilder reported that his patient had passed through the operation satisfactorily, the wound healed well, and there is

20-50 vision, but a high degree of astigmatism, 8 D, with axis 45. There was a great deal of redness for a considerable time after the operation. There is not, he said, the tendency to iritis or iridocyclitis in the Smith operation that there is in the ordinary operation, and therefore he did not understand the condition present in his case.

Dr. Oscar Dodd said that his patient was eighty-one years old, and not in good health. The operation was successful; the bandage was changed on the ninth day, and the eye was then in good condition. The wound had apparently healed. Forty-eight hours later the eye was irritated and the wound was leaking. The eye quieted down for a few days. The only complications that occurred were that the lips of the angle of the iris became adherent to the wound, pulling it up and making the pupil elliptical. There was a large amount of astigmatism, from 12 to 15 D. Vision was 20-200, with an 8 D cylinder, but at the present time it is 20-100, with a plus 5 combined with a plus 10. The media is perfectly clear.

Dr. E. V. L. Brown stated that he had seen about sixty patients in Dayton on whom Dr. Greene had operated, but that in his opinion the results were not as good as those obtained with the ordinary cataract operation.

Dr. D. W. Greene said that these cases are absolutely different from those of the old operation in everything. Some of the things reported tonight as adverse criticism will eventually turn out all right. He had had about 600 of these cases now, and many of the conditions referred to tonight have happened, but they have all turned out better than one would expect. He has not had these things happen in any considerable degree, and that is probably because of the fact that an operator is handicapped seriously when he operates away from his own operating rooms.

In regards to Dr. Nance's case, Dr. Greene had seen the condition he described. The lens came out perfectly in the capsule; the membrane in the pupil can only be some remnant of the suspensory ligament. Dr. Greene's judgment is that the weakest thing about the whole Smith operation is the large section that is necessary to get the lens out. All the trouble encountered relates to the section of the Smith cataract operation, and the section will determine the amount of astigmatism. If one succeeds in getting a straight section, 1-2 or 2-3 cc of astigmatism will not result. If

primary union is secured, a low degree of astigmatism will follow, but if delayed healing supervenes astigmatism is high, but it gradually becomes less as is shown in Dr. Dodd's case, where it was reduced from 12 to 15 to 5D. Myopes are bad subjects, as a rule, because of the low tension of the eye.

If normal tension is present there will be no trouble. If the tension is low, trouble will result. The section made suits the operation, which is an upsetting of the lens. If a circular marginal section is made to upset by pressure below, the upper quadrant of the lens will be constantly in front of the section. Major Smith makes a corneal section and gets more astigmatism than when the peripheral section is made. But the corneal section has many advantages. There is no cystoid healing.

You must remember that meddling treatment of cataract wounds is bad practice. Dr. Greene had the misfortune of seeing a total suppuration of the globe, but what good would it have done to have seen that infection on the second day, because the globe is hopelessly lost, no matter when the suppuration is discovered. In Dr. Dodd's case the wound was leaking; the section involved the upper third of the cornea. The three millimeters section will heal much quicker and better than the large section made in extractions within the capsule. The size of the section is the weakest point of the operation. The lens cannot be extracted without rupture of the capsule unless a large section is made. If the capsule is ruptured the ordinary capsulotomy operation has been done. Dr. Greene has not seen many cases in which there were iris entanglement. Dr. Brown, Dr. De Schweinitz, and Dr. Standish saw about sixty of his cases, and there were only two cases of iris entanglement among the number. That is as good as can be done with the old operation. The pupil is drawn up in many of these cases; in fact, a high pupil is the rule. The doctor suggested to Major Smith that he make the iridectomy from below instead of from the side, as he was in the habit of doing. He has now adopted this plan.

Dr. Greene has seen the black spots mentioned. That is nothing but pigment from the posterior surface of the iris. The reaction in these cases is more severe than in the ordinary operation, but if they are watched it will be seen that while there is redness there is no pain. The redness is more of an irritation than an

inflammation. It is a trauma and not an infection which is really to be expected in this operation.

One advantage of the operation is the fact that an immature cataract can be removed easily and quickly. In removing the lens the pressure on the cornea must be at a point opposite the lower border of the lens. This tears the suspensory ligament and the intraocular pressure forces the lower edge of the lens upward and forward toward the corneal incision. It pops out and is held only by the zonule. The lens comes away clean without any shreds hanging to it. There is no escape of vitreous because as soon as the lens pops out the lips of the corneal wound meet. It is important to keep the hook away from the capsule or it will rupture.

Dr. Faith asked if in the combined extraction it is not uncommon for two raw surfaces to adhere and to have entanglements of the iris to the posterior surface of the cornea? Dr. Ware used to do a preliminary iridectomy on all cataract cases and there was never any entanglement of the iris. The iris healed quickly and there were not two raw surfaces to come together, as in the combined extraction.

Dr. Snyder said that it seemed to him that in the cases reported tonight the average visual acuity was not very great. Is that usual in those cases?

Dr. Greene said he believed in preliminary iridectomy. If this was done in every case we would have greater success. Of course, the eyeball is opened twice and few patients will consent to two operations, which is the point to be considered.

As to the visual acuity, the results reported tonight are by no means typical. Last year Dr. Greene reported seventy-five cases at the American Medical Association, and in most of the cases Drs. Wood and Jackson found better vision than was reported. These cases are being judged at the end of thirty days. Practically all the conditions seen immediately after the operation disappear within a very short time. By delivering the lens by the Smith operation there is in certain cases an attachment between the posterior capsule and the anterior layers of the hyaloid. Where you do not open the capsule you do not have the iritis that you have when you open the capsule.

WILLIS O. NANCE, Secy.

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1. MacCallan, A. F. Ophthalmic Conditions in the Schools in Egypt. *Ophthalmosc. Rev.*, Dec., 1908.

**COLORADO OPHTHALMOLOGICAL SOCIETY.**

Meeting of April 16, 1910, in Denver.

Dr. E. W. STEVENS, Presiding.

**Lacerated Wound of Cornea and Iris.**

Dr. A. C. Magruder presented a man who had received a ragged wound of the right cornea and iris from an exploding oil gauge, August 13, 1909. The iris was entangled in the corneal wound, and the lens was slightly opaque. Some of the iris was excised. The part entangled in the corneal wound below was liberated on the day of injury; that above resisted two attempts at liberation. At no time was glass discovered within the globe. The injured eye was now quiet, and its fellow had shown no sympathetic irritation. Cataract and both anterior and posterior synechia had resulted. The questions of a foreign body in the eye and subsequent probable behavior and treatment of the eye were raised.

**DISCUSSION.**

Dr. Black had long considered penetrating ocular injuries from exploding oil or water gauges relatively less dangerous than those from other foreign bodies, as the glass was sterilized by the heat. In Dr. Magruder's case he thought the good healing indicative of the absence of glass within the globe. If the eye became troublesome later he would remove it.

**Descemetitis.**

Dr. E. T. Boyd showed an adult who had made a good recovery from a recent plastic iritis, under salicylates and atropin. There had been abundant deposits on Descemet's membrane. Those had now disappeared, with the exception of a few minute, distinct but scattered points of exudate.

**Opacities of Lens and Vitreous Associated With Myopia.**

Dr. G. F. Libby showed a man of sixty-three, whose vision in both eyes had noticeably failed in the past four years. He had worn concave lenses since twenty years of age. In the past six years —6.50 spherical in the right and —8.00 in the left had been satisfactory for general use. Three months ago an optician gave —10.50 in the right, and —13.00 in the left: which now gave the best vision obtainable, 1/30 in each eye. A posterior polar cataract and a diffuse nuclear haze was observed in each lens, and each vitreous was so obscured by floating opacities and general

cloudiness that no fundus details were visible. Dr. Libby stated that the only possible hope of ocular improvement he could see lay in the detection of errors of elimination, circulation, or possibly an old specific infection; and that he should refer the patient to an internist for investigations along those lines.

#### DISCUSSION.

Dr. Bane noted the swelling of the lenses. Dr. Neeper thought the hyalitis accounted largely for the poor vision.

Dr. Hess suggested that this was a good case for extraction of the lens in capsule.

#### **Pigmentation of Disk and Blindness Following Brain Hesion.**

Dr. W. C. Bane presented a woman who had been affected by right hemiplegia, inability to express ideas, and by sudden loss of vision of the left eye, the previous August. Marked choked disks and tortuous retinal vessels supervened. The right eye recovered, but not the left. The paralysis gradually disappeared, but it was still difficult to get the correct word to express her thoughts. The left radial pulse had been lost awhile. Degenerative changes in the left eye had finally resulted in a general pigmentation of the nerve head. The diagnosis was given as gumma of the left side of the brain. Treatment: Mercury by inunction and potassium iodid, 45 grains i. d.

#### DISCUSSION.

Dr. Stevens called attention to Victor Horsley's recent paper which located the optic neuritis on the side of the brain lesion; or, in case of both disks being swollen, the nerve on the side of the cerebral injury would finally show the more marked degenerative changes.

#### **Tabetic Optic Atrophy.**

Dr. E. W. Stevens showed an adult with gray atrophy of both optic nerves and Argyll-Robertson pupils, with knee jerk present and station good. R. V. =  $1/30$ , L. V. =  $4/60$ .

#### DISCUSSION.

Dr. Jackson believed the causative factor was syphilis, and thought that the reduced calibre of the retinal vessels suggested vascular disease.

#### **Corneal Ulcer.**

Dr. Stevens presented a man with a sluggish central ulcer of the cornea, that had suffered from a marked iritis. V. =  $2/60$ .

Under atropia, hot applications and leeching the ulcer was slowly healing.

#### DISCUSSION.

Dr. Sisson suggested the intermittent 4-Ray to promote nutrition.

#### **Later Report of Removal of Steel from Vitreous.**

Dr. Stevens also presented a case (reported at last meeting) from which he had removed steel from the vitreous, through rent in lens, iris and cornea, by use of a magnet. The eye was quieting; but the tension was minus, and the pupil was obliterated. The question of making an artificial pupil would be considered later.

#### DISCUSSION.

Dr. Black thought this case was doing well. As posterior synechia had resulted he would consider freeing these adhesions so as to make better connection between the posterior and anterior chambers.

#### **Secretary's Report for Five Years, April 29, 1905 to April 16, 1910.**

During the five years that your present secretary has served you, gratifying progress has been noted as to the quantity and quality of the work of this society, increased efficiency on the part of members, and a steady growth in its acknowledged contributions to ophthalmic literature.

While noting the increase in membership from twenty to twenty-six, it is pleasant to record that no loss has occurred either from removal, resignation or death, in the past five years. While some members have missed but one or two meetings in this period, it has happened that the Secretary alone has been privileged to attend every meeting. Of the last six meetings, the member from Leadville has attended all; traveling 3,000 miles for this purpose.

The tendency to read fewer papers and to make the meetings almost wholly clinical, has seemed to meet with general approval; as has also the increasing number of cases presented and reported.

It has been noticeable, not only that there have been more of the newer members who have discussed cases and papers, but that all have entered more freely and frequently into the discussions.

In the first two of the past five years, two journals published reports of the proceedings of this society, while in the last three years they have had added circulation by appearing in four.

Of books and journal articles published by individuals of this

society, and from the society's proceedings, the editors of the Ophthalmic Year Book noted twenty-one contributions to general ophthalmology in 1905, and sixty-three in 1909.

The influence of the society has been successfully exerted to favor state legislation for the establishment of an institution for the industrial training of adult blind; for the revision of the school laws for the purpose of securing the recognition and correction of physical defects in school children, and to defeat a proposed optometry bill.

Two joint-meetings have been held with rhinologists, to discuss the relation of diseases of the eye with those of the nasal sinuses; and a symposium on the ocular effects of alimentary, renal and cardio-vascular disturbances, was conducted by ophthalmologists, neurologists and internists. The society appropriately observed its tenth anniversary, last year.

Two foreign professors of ophthalmology, J. Hirschberg and C. Hess, and one holding an American chair, L. W. Fox, have been honored guests of the society; and Professor Hirschberg constitutes our only honorary member, at the present time.

#### **Election of Officers.**

Drs. G. F. Libby and Melville Black were re-elected as secretary and treasurer, respectively, and Dr. E. R. Neepser was chosen as chairman of the executive committee, for the ensuing year.

GEORGE F. LIBBY, Secretary.

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### **OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.**

An ordinary meeting of the Society was held at the Medical Society's rooms, Chandos street, West, on Thursday, May 5, 1910.

Dr. G. A. BERRY, President, in the Chair.

Mr. Bishop Harman showed a case of paralysis of external rectus the result of an accident.

Mr. Treacher Collins exhibited a case showing yellow patches scattered through the iris tissue, in the stroma. Mr. L. V. Cargill showed a patient with acromegaly, and Mr. M. S. Mayou two cases of heterochromia in early life. Mr. Tomlinson showed and illustrated by the epidiascope, recent amaurosis with unusual cupping of the disc, in a youth; and Mr. A. S. Worton a case of congenital arterial loop projecting into the vitreous.



Colonel H. Herbert read a paper on the small flap incision for glaucoma. Two years ago Mr. Herbert performed a small operation upon eight glaucomatous eyes, which had been described already briefly as a form of subconjunctival paracentesis. By means of a narrow Graefe knife a small rectangular sclero-corneal flap was cut subconjunctivally, with its base at the limbus. This flap might be forced forward a little under the conjunctiva, by the intraocular pressure. And probably it tended to shrink slightly in volume through being deprived of its direct blood supply for a time. Firm reunion appeared to have been thus prevented. The results up to date were available in six only of the eight cases. One case was a failure owing apparently to adhesion of the iris to the wound. In the remaining cases the tension had been reduced to normal by means of linear filtering cicatrices. In two of the cases, however, the complete reduction of tension had occupied a period of a few months. The leakage of aqueous was at first insufficient. Two of the patients were shown at the meeting. During the last five months Mr. Laws and Mr. Herbert had been operating by means of a similar flap, but broader, and hence placed usually above, owing to the possible need of iridectomy, basal or complete, to prevent adhesion of iris to the wound or prolapse. These incisions had been made mostly by means of keratomes and of bent, narrow, blunted knives. Flaps also 2-3 mm. wide had been utilized in some cases made with the narrow Graefe knife at the outer side of the cornea. It was too early to say more about the results of Mr. Herbert's fourteen recent cases than that they were very encouraging. In two cases adhesion of iris had formed to both limbs of the small section, yet had not interfered appreciably with filtration. Combined iridectomy, peripheral or complete, according to the state of the iris, appeared advisable with the broader incision in cases in which the pupil did not contract well to eserine. It had been performed in three cases only in this series, and secondary iridectomy two days later in one case. By this operation an attempt was made merely to secure with certainty and safety the same linear filtering cicatrix which was sometimes the chance result of an ordinary iridectomy operation. The length and peripheral position of the typical iridectomy incision favored gaping of the wound, and thus tended to produce a filtering scar. In Mr. Herbert's experience a filtering or fistulous cicatrix was the rule after a

successful iridectomy, and in itself was sufficient to account for the success. Mr. Priestly Smith said he had been struck by the success of the operation and the small degree of disfigurement caused. Mr. Allport had under his, Mr. Smith's control, operated by the method upon eleven eyes, without any failure; and he, the speaker, regarded it as a very valuable improvement in the methods of treating glaucoma, and congratulated Colonel Herbert upon it. Mr. Treacher Collins had had no experience of the operation, but desired to know the anatomical difference between a filtration scar and a fistulous scar. Mr. F. R. Cross agreed that the establishment of a fistulous opening made a permanent result more likely after operation for glaucoma than without such. Dr. Laws said he had done the operation fourteen times, and gave the results. There had been no failure or harm in any case. Sometimes, owing to progressive loss of vision, one had to try other methods. Dr. Allport gave the satisfactory account of twenty cases on which he had done the operation.

Mr. Herbert Fisher read a paper on congenital word-blindness. (Inability to learn to read). After alluding to some of the previously reported cases of the condition Mr. Fisher reported four others which had come under his own observation in one girl and three boys. In one of the male cases there appeared to be very suggestive evidence of a hereditary and family tendency to the defect, in another there had been considerable flattening of the left side of the cranium at birth, and a remnant of this deformity could still be easily recognized. Mr. Fisher thought it probable that as further examples of the defect were collected the cases would be found to range themselves into two groups; (a) the hereditary group, in which the visual memory center for words residing in the left angular gyrus failed in development; probably in this group a considerable proportion of the female cases would be found; (b) a group due to limited meningeal hemorrhage over the same gyrus, the result of birth injury. This group would account for the well recognized great preponderance of congenital word-blindness in the male sex. Obstetricians recognized in the greater size of the head in male than in female infants at birth; the more frequent necessity for artificial assistance and the greater risk to mother and to infant in the birth of male than of female children. Mr. Fisher pointed out that later meningeal hemorrhages

at the time of parturition and resulting in birth palsies are twice as common in male as in female children. Mr. Fisher urged the necessity for special and private tuition for children with this defect of congenital word-blindness. He thought the phonic method of learning to read, making use of the glosso-kinaesthetic center to aid the visual memory center, less likely to lead to a satisfactory result than endeavors to train a vicarious visual memory center in the right hemisphere; for such training he advocated the "look and say" method of learning to read; the child should use the "word" as its unit of observation and study, and not the individual letters. The "look and say" system had been practically developed by Miss Mason of 56 Romola Road, Herne Hill, S. E., in her "Delightful Reading Box" system, which Mr. Fisher had had used with most satisfactory result in one of his cases reported to the meeting.

Dr. F. E. Batten discussed the paper, pointing out that Bastian, long before 1900, described the condition and reported cases. He, Dr. Batten, thought it difficult to explain word-blindness on the hypothesis that there was an actual defect in the angular or marginal gyrus. Bastian's view was that it was really a commissural defect. Such cases could, as a rule, read figures well; and he knew the case of a butcher boy who could remember accurately the various orders given to him on his round and deliver the meat properly to the respective houses. He, Dr. Batten, was very favorably impressed with the method of teaching such children which had been described by Mr. Fisher.

Mr. Treacher Collins said he had seen many cases of the condition and had been surprised to find how common it was. They were frequently overlooked, and attributed to sheer stupidity, to the great discomfort of the child. Several of the patients he had seen had been atrocious spellers. If the British system of spelling had been phonetic the defect would not be nearly so noticeable. In Germany, the language there being much more phonetic, such cases were said to be far less common. He thought they had sufficient visual memory for words to enable them to recognize words when they saw them, but not sufficient to recognize when a letter in the word was out of place or omitted. Some could learn by ear, but not from books. Mr. R. W. Doyne objected to the name "word-blindness," and he thought the condition was more common in

boys than in girls. The defect was a question of degree, and was not regarded as pathological. Those who were word-blind would read their lessons aloud, so as to learn them. Mr. Fisher replied.

Dr. A. Bronner (Bradford) read notes on six cases of hypopyon keratitis treated by local applications of pyocyanase. Many cases of ulceration of the cornea, especially in elderly people, were most difficult to cure, and often ended in complete destruction of the cornea. In some recent cases Dr. Bronner had applied 50 per cent pyocyanase eye drops every hour. In every case the pain had disappeared in a day or two, and the ulcer had healed up more quickly and with less consequent opacity of the cornea than under the ordinary method of treatment (galvano-cautery, carbolic acid, sub-conjunctival injections). Of course, atropine drops and hot fomentations were also used.

Pyocyanase was a brownish fluid prepared from broth cultures of the *Bacillus Pyocyaneus*, as suggested by Emmerich and Lowe, of the Institute of Bacterio Therapeutics, at Dresden.

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An ordinary meeting of the society was held in the Medical Society's rooms, Chandos street, Cavendish Square, on Thursday, June 9th, 1910. Dr. G. A. Berry, president, in the chair.

Mr. C. Blair showed a case of extensive subconjunctival rupture of a buphthalmic eye; recovery, also brother of the above patient—also the subject of buphthalmia, and complete congenital dislocation downwards of lens.

Mr. R. W. Doyne showed a case of illustrating a not uncommon degree of word-blindness. Guttate iritis, and test lenses for the dark room.

Mr. A. H. Thompson showed a case of vertical nystagmus, with movement so fine as to escape notice with the naked eye.

Messrs. E. Treacher Collins and A. C. Hudson exhibited microscopical sections of an eye with unusual yellow patches in the iris, shown at the last meeting. The patches consisted of large polygonal cells with small shrunken nuclei and spongy cytoplasm, closely packed in a fine reticulum in which the degenerated chromatophours of the iris could be distinguished. The large cells were thought to be probably degenerated endothelial cells. A

flat preparation of the choroid from the same eye showing very extensive colloid body formation was also shown.

Mr. Arnold Lawson showed a case of scirrhus of the orbit.

Mr. Lang exhibited a case of growth under the conjunctiva.

Dr. Rayner D. Batten showed a case of Raynaud's disease, and Mr. Pooley (Sheffield) a case of traumatic condition of the retina.

Mr. Ernest Clarke read a paper on Optic Atrophy, following the use of Arylarsonates in the treatment of syphilis. The first case was that of a man aged 46, who was given 10 injections of 5 grains of soamin every alternate day, and after the last the sight became misty. Several months later he had three further injections of 5 grains. He had vision of barely hand movement in one eye and 6-12 with scarcely any field in the other. Both discs were atrophied. The next patient, aged 49, had 10 grains of orsudan on alternate days, and after the 9th injection the sight began to fail. Both discs became atrophied. He then stated what other writers had found after administration of the drugs atexyl and soamin, and the number of cases in which optic atrophy had followed was considerable. The condition of the discs in these two patients left little doubt but that the drugs were responsible. Possibly the combination of arsenic, aniline and syphilis might be particularly destructive to the optic nerves, but the lesson he wished to point out was that great care should be exercised in the administration of arylarsonates. The eyes should be most thoroughly examined before and during the administration of the drug. That disease of the arteries, kidneys or liver, contraindicate its use. That the dose should be carefully regulated according to the body weight and age of the patient, and it was doubtful if it ever was safe in anyone over 40 years of age. Colonel Lambkin, who is the great advocate of the treatment, had used it mostly, if not entirely, in young subjects. He concluded by saying that when the profession had fully recognized the limitations of the use of the Arylarsonates, it might be that they would prove to be all that could be desired of them, but question would arise as to the expediency of employing them at all for the treatment of syphilis. It was one thing to risk blindness in being treated for a fatal disease like sleeping sickness, and quite another to risk it in the

treatment of syphilis, even if in some cases it were more successful than the ordinary and well tried method.

Mr. N. Bishop Harman read a paper giving details of the inheritance of congenital cataract in nine families. Of these five were of lamellar cataract, one of coralliform cataract, one of cataract, one of discoid cataract, and one of form unknown since the cataracts had been removed some years ago, and one of posterior polar cataract with microphthalmia. In the families with lamellar cataract several showed an inheritance, through several generations and in numerous individuals. In one a marriage of first cousins seemed to accentuate in their progeny. Another of these families showed grave mental disorder on both sides of several generations; several dying mad on the paternal side, and many suffering from epilepsy on the maternal side. The case of posterior polar cataract with microphthalmia was particularly distressing, for of five children born to an apparently healthy couple, of whom two were twins, the four surviving were all irremediably blind from the defective growth of the eye. It was noted that in several instances those affected with congenital cataract were mentally defective.

Mr. Wray, discussing Mr. Clarke's paper, pointed out the importance of giving the arylarsonates in accordance with the body weight. Cases of blindness after its administration had been numerous after the substance was given, and it occurred in two sets of cases—after sleeping sickness and after syphilis. Fifteen per cent of cases of syphilis recovered without the administration of mercury at all. Too little had been heard about the Wassermann reaction in treatment; it was used chiefly in diagnosis. Mr. Brewerton, the president; Mr. Dawnay, Mr. Doyne, Mr. Collins, Mr. Mayou, Dr. Farquhar Buzzard, Mr. Pooley and Major Molo discussed the case.

Mr. Doyne showed some cases among members of his first family of "Family Choroiditis" and pointed out that the spots were exudations, beginning in early adult life, but more generally later, increased very much in middle age, when, though the appearance of the lesion was gross, the sight was not proportionately affected and finally in old age passed into atrophy with very great loss of sight.

C. DEVEREAUX MARSHALL.

**WILLS HOSPITAL OPHTHALMIC SOCIETY.**

Meeting of February 1, 1910.

WILLIAM CAMPBELL POSEY, M. D., Chairman.

Dr. Posey exhibited a negro who had presented clinically the signs of a large tubercle of the ciliary body. As, however, tuberculin had failed to produce a reaction and as the growth slowly disappeared after injections of mercury and high doses of potassium iodide, he supposed he must accept a diagnosis of gumma rather than that of tubercle.

Dr. George S. Crampton exhibited a colored woman with a retained hyaloid artery which floated freely except for a filamentous attachment above and below anteriorly. A bud on the disk showed the origin of the retained vessel. The vitreous was clear, the fundus being normal, and the lens was without opacities. The patient was probably leuic for there was widespread though superficial choroiditis in the right eye, and there were healed areas of periosteal disease, and the woman said that her hair had fallen out, but stopped after she had used some medicines. The vision of each eye was normal, yet there was moderate convergent strabismus.

Dr. Burton Chance in introducing the subject of "The Occurrence of Glaucoma after Cataract Extraction," said that such a complication is indeed rare in the experience of the surgeons at this hospital. He recalled a case of long delayed healing in which there was a marked increase in the tension in spite of the apparently pervious wound. In about fifteen years he remembers seeing only two other cases. He believes that the condition is always secondary to some fault or accident or other mechanical complication arising in the technic or during the healing of the primary operation, and is not due to any inherent tendency to glaucoma in the eyes themselves. The effects of such a complication have usually led to the destruction of sight. The treatment can be only operative and such as would be of service in essential glaucoma, namely iridectomy and sclerotomy and the discission of capsular membranes. The prevention of so grave a complication depends upon the toilet of the wound at the time of the extraction whereby all prolapses of the iris and tags of capsule are reduced and relieved from entanglement in the wound; and when capsulotomy or discission is performed a tapering knife needle should be used whereby the

corneal puncture may be firmly plugged and all capsular shreds prevented from becoming adherent to the wound of puncture.

Dr. S. D. Risley in opening the discussion, spoke of the light thrown upon the etiology of increased tension after the extraction of hard cataract by our experiences after discission operations in soft cataracts in young people. Although usually ascribed in these cases to the too rapid swelling of the cortex, he thought it probably due to other factors, also since the increased tension sometimes occurred in cases of very moderate swelling and did not come on in others even though large floating cloud-like masses occupied the anterior chamber. He reported by way of illustration the brief history of a patient who had been successfully operated upon by simple extraction leaving a round, mobile central pupil. In two weeks after a secondary capsulotomy there was an attack of acute inflammatory glaucoma  $T = +2$ . There was a wave-like movement visible in the anterior chamber which was not shallow, with every movement of the eye. An iridectomy was performed and a viscid semifluid substance escaped through the incision. The relief was prompt; vision rose to 6/9 and there was no recurrence. Dr. Risley believed that a paracentesis would have been sufficient in relieving the symptoms without an iridectomy, the spaces of fontana having been blocked by the viscid contents of the anterior chamber, probably semifluid vitreous, which had come forward through the rent in the posterior capsule. He reported a second case, of glaucoma of the subacute inflammatory type coming on seventeen years after the extraction of the lens by the combined method. The coloboma was a broad one and resulting  $V = 6/6$ . The man had been operated upon in Feb. 1890. The eye remained good until July, 1907, when he had an attack of pain, redness and impaired vision, which was ascribed to cold, and subsided without treatment. There were numerous recurrences of variable severity. He returned to the clinic in Dec., 1909. The eye was blind,  $T = +2$ , and no injection other than the characteristic engorgement of the anterior perforating vessels in the ciliary region. The media were clear and a deep typical glaucomatous cupping of an atrophic optic nerve. There was no demonstrable closure of the angle by the root of the iris at the base of the coloboma nor was there any disease of the uveal tract which might have closed the posterior filtration channels. Dr. Risley said in rejecting these possibilities for an explana-



tion of the glaucamo, we had left the alternative of accepting the possibility of an attack of subacute inflammatory glaucoma in an aphakial eye with a broad coloboma in the iris. The tension and pain were promptly relieved by the repeated instillations of eserine salicylate.

Dr. Harold Goldberg reported the histological findings in a case of glaucoma following a combined cataract extraction. The notable features of the case were the absence of the changes usually observed in glaucomatous eyeballs, i. e., the blocking of the angles of the anterior chamber, cupping of the disk, etc. But there was the presence of certain blood-vessel changes, as of degenerations in their walls: the drifting of the leucocytes, producing gradual slowing of the current and multiple hemorrhages throughout the various parts of the eyeball. The pathologic findings would be classed among those arising in the so-called complicate cataracts, because degenerative changes were found throughout all the tunics and especially in the choroid. He pointed out the difficulty of determining the cause of this class of secondary glaucoma, yet he believed in this case it was due to the pathologic changes in the blood vessel walls.

The chairman said that in all cases of glaucoma after cataract operation there was doubtless definite pathological changes, which could be accounted for only as a consequence of the operation. Recently he had operated on a case by the combined method, making the flap wholly within the cornea. There had been delayed union and as a consequence one of the pillars of the iris prolapsed into the corneal wound. Glaucoma set in, tension became elevated and the cornea was steamy. The wound of incision was opened and the iris replaced and there was a prompt relief of the glaucoma. He had often wondered why glaucoma arose in some cases after a small entanglement of one of the pillars of the iris in the corneal wound, whereas in other cases there was no increase in tension even when both pillars had prolapsed.

Dr. Posey referred to the chapter which he had written on the subject of "Post-operative Mania" in "The Eye and the Nervous System," and he said that he had nothing new to offer now. He rehearsed the various theories which had been advanced to account for the origin of the delirium. Siehel thought the delirium was due to a change in the disposition of the individual, which resembled

nostalgia. A number of authors, however, assume a special tendency towards mental derangement in all who become delirious following operations upon the eye. Among these may be mentioned Arlt, Schmidt-Rimpler, Knies, Warlomont, Hirschberg and Valude. These authors believe that mental symptoms arise in only very weak and nervous people, but fail to mention further characteristics of this predisposition. Lopez thinks that the delirium occurs only in those who are already actually alienated, although usually in a latent form, the mental weakness having passed unperceived by the physician. Among occasional exciting causes may be mentioned Parinaud's explanation of extreme preoccupation of the patient for several days preceding the operation itself, and the withdrawal of all external impressions during the first few days after the operation, resulting from the absolute rest in bed, and the darkness and seclusion enforced by the closed eyes. Schmidt-Rimpler is strongly of the impression that one of the chief factors in the production of the delirium is the bandaging of both eyes, and in support of this theory cited two cases in which no operation was performed, but in which delirium developed, as he thought, simply by reason of their being confined in a darkened room during the treatment for their ocular affection. Another set of authors, including Galezowski, Salvator, Angela Ledda, and Lemkiewicz, attributes the delirium to the action of atropine. Schnabel was of the opinion that the psychosis was merely a form of senile delirium and he explained the transitory nature of the disturbance in mentality as well as its sudden appearance, to circulatory changes in an atrophic brain. He thought that the hyperaemia of the brain is favored by the prolonged rest upon the back, with the stillness and darkness, to which the patients are subjected while in a more or less excited condition. Lopez, Martin and Fernandez believe the abstinence from customary alcoholic stimulation is the determining factor in producing the delirium. In a paper which was presented at the Congress of Alienists of LaRochele, in 1893, Régis and Chevalier-Lavaure considered the delirium which is observed after operations in general to be due to autoinfection as a result of uraemia and toxins originating in the intestines, and thought that the mental disturbance in these cases was analogous to those occurring in typhoid fever, influenza and erysipelas. Formaget subscribed to this theory as being operative in most cases of delirium after operations upon the

eyes and was of the opinion that the conditions favoring auto-infection were found in the disturbances of the liver, kidney and heart, which are common to the aged. Kipp, in a recent article, in which he reported 12 cases of delirium after operation and injury of the eye, concluded from a study of these cases that the "psychoses were the result of a change in the patient's environment and an increasing longing to get away from the new surroundings." He refers to the condition as a homesickness, or nostalgia, which may end in a form of melancholia with homicidal and suicidal propensities. Dr. Posey cited objections to all these theories and said that after a critical study of the entire subject he had finally arrived at the opinion that while any of the above factors, or others, such as the constraint of the supine position and the unusual stillness of the surroundings, may operate in certain cases as etiological factors, the chief cause of the delirium after operation upon the eyes is largely psychic, and agrees with Parinaud that it is due to the preoccupation upon the part of the patients prior to and after the operation. Treatment consists in improving the state of the cerebral circulation by nitroglycerin and strychnin; in controlling the delirium by hypnotics; in a supplementary diet; and in the administration of alcohol if the patient has been habituated to the use of intoxicants. In conclusion Dr. Posey said that of 24 cases collected from the wards of the hospital the delirium appeared 11 times after simple extraction, 8 times after the combined operation, 3 times after iridectomy for glaucoma, and twice in traumatic cases where no operation had been performed upon the eye or its adnexa. A study of the records in the Wills Hospital showed that delirium occurred in 26/117 per cent of all cataract operations.

Dr. Ziegler believes that excessive nervous strain is at the bottom, for it usually is manifested soon after the operation when the patient has become relaxed. He relies greatly on the hypodermic use of hyoscin and morphin, which act on the restrained lymphatic circulation. Later he gives pilocarpin and strychnin. He cited two cases from his experience, and he said that he had found that delirium was not particularly likely to follow any special form of operation.

Dr. Schwenk told of two instances in which the lack of occupation and the confinement with abstinence from certain habits had excited to delirium. One was in the person of an old negro who

had been the servant of a famous southern politician. She seemed to "pine for a smoke," and when pipe and tobacco were given her she soon recovered from the delirium. The other case was relieved when smoking was allowed.

Dr. Randolph of Baltimore said that in their experience at the Johns Hopkins Hospital but few cases had developed, these being in women, and such as he had seen were old alcoholics. He very much doubted that the toxic effects of atropin could be excluded in the consideration of the causation of mania.

Dr. S. D. Risley said that the remarks in the paper and the following discussion had shown plainly that the delirium was not due to the same cause in all cases. The cases coming under his own observation had all been males and were without question different in character. In one case for example the delirium had promptly disappeared as soon as the bandage was removed from the unoperated eye while in others this procedure had no notable effect. In some instances the mental state had grown rapidly worse under the administration of bromids but improved under a cerebral stimulant like stramonium or hyoscin. But he had seen these drugs also aggravate the condition, and relief speedily follow the taking of a cup of strong tea or coffee, or doses of tincture of nux vomica. After the failure of stramonium and bromids to relieve a violent mania in a miner, both of whose eyes had been destroyed and the face and scalp lacerated by an explosion, he grew quiet in a few hours under large doses of tincture of nux vomica. It is possible that the same result might have followed the administration of his accustomed medium of whisky. Dr. Risley had seen a low muttering delirium follow cataract extraction in an old man with glycosuria, for which no treatment did any good, and he was sent to his home in a state of senility from which he never recovered. Dr. Risley believed that some of these cases were to be accounted for by a temporary senile state superinduced by the hopes and fears, the trials and perturbations inseparable from surgical interference and life in the hospital. The condition of surgical delirium was therefore, in his judgment, a complex one and could not be defined by a single formula or be treated by any one routine. In his experience bromids had worked badly and he thought were usually to be avoided.

Dr. Berens said that he had had three cases in women all of

whom were temperate, and all made good recoveries. He regards the cerebral weakness to be due to cardio-vascular changes. Prior to operation upon the aged he carefully attends to the gastrointestinal tract and administers cardiac tonics.

In speaking upon "The Fallacy in the Use of Amethystine Glass," Dr. Conrad Berens said that "the slightest alteration in the chemical composition of matter causes marked variations in its reactions and properties; and furthermore, all objects seen by transmitted or by reflected light, exhibit exactly that color which is complimentary to the sum of the rays absorbed." Accordingly he holds that in the use of glass of an amethyst tint the non-irritating rays at the red end of the spectrum are cut off while at the same time there are admitted the highly irritating rays at the violet end of the spectrum.

Dr. Ziegler favors the use of "Amudle-tint" rather than amethyst, and he told of the substitution of old window glass which has been subject to photo-chemic changes, of the kind seen in old houses in this city. He had found tinted glass serviceable in the neurasthenic and had frequently prescribed a peacock or greenish blue.

The chairman said that Dr. Berens' remarks were of exceeding interest and value and they corroborated the views of Dr. Frank of Chicago as he expressed them at the last meeting of the A. M. A.

BURTON CHANCE, Secretary.

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Meeting of Monday, March 7, 1910.

SAMUEL D. RISLEY, M. D., Chairman.

Dr. William Campbell Posey exhibited a case of bilateral congenital ptosis, upon which he had recently operated with satisfactory results by the Tansley-Hunt method, the right palpebral fissure being increased in width from 5 to 11 mm. and the left from 3 to 8 mm. Dr. Posey said he hoped that the widening of the fissure would be still further increased, as the cicatrices became denser and more contracted and the patient developed the facility of bringing the frontalis into play.

He said that he preferred this method to that of Panas, which he had formerly employed with the modification of excising small semi-lunar segments of skin from the lid for the purpose of increasing the action of the operation. In only one case had he ever seen

a fistula develop as a consequence of the apposition of the skin surface of the flap to the raw surface of the bridge of supra-orbital tissue, and this was the result of slight infection.

Dr. Posey also exhibited a case of cicatricial entropion, which he had operated on by the Beard method. This was the first case in which he had utilized this operation and the result attained by it seemed excellent. In answer to Dr. Risley's query as to whether he had had any difficulty in carrying out the technical details of the procedure, Dr. Posey replied that he had not. The operation appeared simple, consumed but little time, and the eversion of the lid and the overcoming of the deformity of the cartilage was readily attained. On account of very marked scarring of the margin of the lid, however, he had not transferred a piece of mucous membrane from the mouth on to the margin, as suggested by Dr. Beard. He said that in similar cases he had frequently resorted to the transplantation of the small flap of skin taken from the anterior surface of the lid, on to the ciliary border and had found that such grafts had healed kindly and had given good results.

Dr. Posey then showed a woman with marked keratitis following an attack of grippé.

Dr. S. D. Risley detailed the history of an additional case of Mules' operation as a substitute for an ulceration. He said he had done this operation in a large number of patients, with most satisfactory results, both for the comfort of the patient and for the cosmetic effect. In his experience in one instance only had the glass ball escaped from the scleral cup, and in that case an unfavorable prognosis had been given because of the shrunken ball. He had never seen sympathetic trouble supervene, nor a migratory ophthalmia follow the insertion of an artificial vitreous. He had in every case used a glass ball. He thought it unwise to perform this operation where a secondary ophthalmia had already invaded the other eye.

He regarded the operative technique as of great importance. The conjunctiva should be separated from the sclera a centimeter from the corneal margin in its entire circumference before the removal of the cornea. The anterior opening in the sclera should be a horizontal oval instead of a circular abscision of the cornea. The scleral contents should be thoroughly removed in order to leave a clean white coat and the glass globe should not be inserted

until the bleeding had completely ceased. The ball should be large enough to completely fill the scleral cup, leaving only room sufficient for the placing of the interrupted catgut sutures well back from the scleral border. This, and the complete filling of the cup he regarded as of signal importance. The bandage should be applied evenly and firmly and should not be removed for forty-eight hours.

Dr. Goldberg said he would emphasize Dr. Risley's dictum in regard to the size of the spheres for, from his studies of a number of scleral cups which had been removed because of failure, he believes that a small sphere can irritate the sclera and cause it to become thicker, and further, the space intervening allows exudation to take place whereby strain is put upon the anterior portion and the sutures are loosened.

Dr. Posey said he had recently seen a young woman in whom a colleague had inserted a sphere ten years ago. The result had been most satisfactory surgically, but there had developed recently inflammation in the fellow eye which contains an old cataractous lens.

Dr. G. Orem Ring said in his experience favorable results depended upon the complete excision of the cornea, a sphere of the exact size of the scleral cup, and the placing of the stitches.

Dr. Harbridge asked why Dr. Risley had always used glass spheres. He recalled a case, which he had previously reported to the society, in which a glass ball had been shattered by a blow; and, in another case, where enucleation had followed, he had noticed that the glass was much eroded. He therefore looked upon glass as being too frail and unendurable; he has always used gold. Since his communication two years ago he has had four or five other cases; one, in which there was a button of bone and a calcareous lens.

Dr. Risley in closing said he prefers glass because of the likelihood of metals setting up chemical reaction.

Dr. Harold Goldberg presented and described two specimens prepared by him from the case just described by Dr. Risley. The first was an instance of a calcareous choroid, wherein the calcareous deposits were so extensive as to entirely inclose the uvea. Posteriorly the deposit formed a dense shell several millimeters in thickness which at first was mistaken for true bone. This, however,

did not prove to be the case. The second was that of a tattooed cornea in the sections of which the artificial pigment was found infiltrated in the walls of the interlamellar and canalicular spaces of the substances proper, leaving in most cases a hollow center. The corneal cells were in an unusually healthy state of preservation, and it was especially remarkable that but little proliferation of the connective tissue and infiltration had taken place in spite of the amount of traumatism one might expect to find accompanying the operation of tattooing. It was also noted that the line of the epithelium had not been disturbed and that but few pathologic changes had taken place in the cells.

Dr. Risley said he had had the cornea examined because he had always looked upon the tattooing of the cornea of a diseased eye as unsafe. Dr. Goldberg's findings, he believes, are unique, for as far as he knows this is the first report of an examination of a tattooed cornea. In this case the cornea had a central area of calcareous degeneration from which there extended radiating lines of pigmentation.

Dr. De Forest Harbridge reported the following interesting clinical cases in which unusual complications had followed operations upon the eyeball. In the first case, following an iridectomy and the removal of lens in a glaucomatous eye, the edges of the corneal incision did not become agglutinated, but, in the course of eight days, there was eversion of the flap so that it assumed a position horizontal to the normal. By means of two sutures the corneal flap was brought into position and healing finally took place without infection. With a correcting lens the acuity of vision equaled 6/15. The second case was one of sudden death, immediately following the performance of an iridectomy in a case of acute glaucoma. There was no warning whatsoever of impending danger before the operation. The patient was entirely conscious, as evidenced by his prompt response to the direction to move his eyes, until his death ensued scarcely thirty seconds elapsed. A solution of cocaine had been used to anesthetise the globe. No cause for the death could be assigned. In his third case, five days after a cataract extraction, in which there was considerable hemorrhage into the anterior chamber, the patient was seized with a partial paralysis of the left arm, which disappeared, however, in ten days, only to be followed by a partial paralysis of the right side of the



face which did not clear up for two to three months. The ocular effusion cleared promptly but the good acuity of vision obtained early by correcting lenses was later reduced 6-60 by the occurrence of macular hemorrhage. The patient was a subject of general arterio sclerosis.

BURTON CHANCE, Secretary.

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#### BOOK NOTICES.

DISEASES OF THE EYE. Sixth Revised Edition. By George E. de Schweinitz, M. D., Professor of Ophthalmology in the University of Pennsylvania. Sixth Revised Edition. Octavo of 945 pages, 351 text illustrations, and 7 lithographic plates. Philadelphia and London: W. B. Saunders Company, 1910. Cloth, \$5.00 net; half morocco, \$6.50 net. W. B. Saunders Company, Philadelphia and London.

PHYSIOLOGY AND PATHOLOGY OF THE SEMI-CIRCULAR CANALS. Being an excerpt of the clinical status of Dr. Robert Barany, with notes and addenda gathered from the Vienna clinics. Published by Paul B. Hoeber, 69 East Fifty-ninth street, New York, 1910. Price, \$1.00; 64 pages.

This little book by Dr. Ibershoff is intended to place labyrinthian physiology and pathology on a practical basis and to clearly enunciate principles and phenomena which will aid the otologist in the formation of an accurate diagnosis. This is a subject that has been and still is more or less perplexing to otological and neurological students, and this little book based upon the work and investigations of such men as Barany, Ruttin, Neumann, Alexander and Ibershoff, will do much toward clarifying the situation. It is one of those little books which may be carried in the pocket and read whenever a convenient opportunity affords itself. We heartily commend it to the readers of the RECORD.

REGARDING THE NATURE AND ORIGIN OF THE CAUSES OF TRACHOMA, with especial Observations on the Gonococcus of Neisser. By Prof. Dr. Hans Herzog, Berlin. With two lithographed plates. Published by Urban & Schwarzenberg, Berlin and Vienna, 1910. Price, \$1.25 (Mk. 5).

## Notes and News.

Personals and items of interest should be sent to Dr. Frank Brawley, 72 Madison street, Chicago.

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Dr. Charles A. Oliver of Philadelphia will spend his summer vacation in Europe.

At the annual meeting of the Canadian Medical Association held in Toronto, Can., in June, Dr. R. A. Reeve of Toronto was elected to the executive council of the association.

Professor Hess of Wurzburg has received a call to succeed Prof. Th. Leber in the chair of ophthalmology in Heidelberg.

Dr. Adolph Alt of St. Louis has resigned the chair of ophthalmology at the St. Louis University and has accepted the professorship at Washington University.

At the Roosevelt Polyclinic which has been opened at 679 Broadway, San Francisco, the department for eye, ear and nose diseases is in charge of Drs. Albert Cohen and Oscar Tobriner.

At the recent meeting of the American Academy of Medicine in St. Louis Dr. Ira S. Wile of New York City said that 25.21 per cent of the new admissions to schools for the blind in 1907 were due to ophthalmic neonatorum.

Dr. Myles Standish of Boston and Dr. Lucien Howe of Buffalo received the degree of D. Sc. from Bowdoin College at the recent commence exercises. Commander Robert E. Peary of the class of '77 was present.

Dr. Francis Valk, professor of diseases of the eye in the New York Post Graduate School and Hospital, received the degree of Doctor of Science at the one hundred and twenty-eighth anniversary of Washington College, Chestertown, Md.

The Bulletin of the Medical and Chirurgical Faculty of Baltimore, Md., which was so ably conducted by Dr. Henry O. Reik, has passed into the hands of the Faculty. The Bulletin has suggested that a physician be placed on the staff of every daily newspaper to edit the items on medical subjects, especially those dealing with the new movement for the public health.

A difference of opinion has arisen recently between the medical

council and the government as to the right to grant the title of specialist. For a few years endeavors have been made to regulate the question and to prevent the increase of self-styled specialists. The right to confer this title was claimed by two universities, and special examinations or at least certain studies were demanded as the minimum requirements. In the case, a doctor who had made the treatment of diseases by physical means, like massage, gymnastics, electricity, his special study, settled down in a country town and asked and received from the medical council permission to call himself "specialist for physical treatment" (*Spezialarzt für physikalische Heilmethoden*) which, however, was not recognized by the district government officer. At length the right of the council to grant the title was recognized, and the right of a medical representative body to regulate the affairs of its own members has been clearly acknowledged for the first time in this country. In connection with other satisfactory achievements, like the right to settle financial disputes between practitioners and private corporations, the growing influence of medical representatives is clearly shown, proving the value of a good organization.

In a recent letter to Dr. Louis Stricker of Cincinnati, Colonel Henry Smith asserts that there is no added danger of vitreous loss during or after the extraction of cataract in the capsule when the corneal incision is made downward instead of in the usual situation upward. He has made the lower incision frequently in troublesome patients who persist in looking at their feet and who, of course, are more likely to lose vitreous. At the same time he does not believe it the ideal incision, because it is much easier to extract through an upper incision and to reach the usual field of operation. Furthermore, he adds, "It is not a cosmetic position and it is a position in which the incision is just behind the commissura of the lids when the eye is in the position of sleep as it is when the patient is bandaged up and goes to rest in bed and is thus in the least safe position as regards sepsis, but as regards your question you may be quite satisfied that there is no danger of the vitreous flowing out in the way you mention; as a matter of fact it is much easier to extract through an upper incision, more easy to get at the necessary field."

# CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.G.) J. F. Burkholder (E. E. N. T.)	G. W. Mahoney (Poli.) *Geo. F. Suker (P.G.) Oliver Fydings (E. E. N. T.) C. H. Francis (Poli.)	E. J. Brown (E. E. N. T.)	G. W. Mahoney (Poli.) Richard S. Pattillo (P.G.) J. F. Burkholder (E. E. N. T.)	Richard S. Pattillo (P.G.) Oliver Fydings (E. E. N. T.)	G. W. Mahoney (Poli.) E. J. Brown (E. E. N. T.) C. H. Francis (Poli.)
10 A.M.	L. J. Hughes (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	E. J. Brown (E. E. N. T.)	L. J. Hughes (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)
	Brown Pussey, N.W.U. Every day, 10-12 A.M.					
11 A.M.	H. W. Woodruff (E. E. N. T.)	A. G. Wipern (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	A. G. Wipern (E. E. N. T.)	H. W. Woodruff (E. E. N. T.)	A. G. Wipern (E. E. N. T.)
1 P.M.		Willis O. Nance (C.C.S.)		Willis O. Nance (C.C.S.)		Willis O. Nance (C.C.S.)
2 P.M.	E. V. L. Brown (Inf.) E. J. Gardner (E. E. N. T.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) D. K. Remmen (Inf.) D. A. Payne (Ills. Med.) N. E. Phillips (Inf.) F. A. Phillips (Inf.) Wm. H. Wilder (Rush) Emily Selby (Inf.) Wm. H. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) Thos. Faith (E. E. N. T.) E. K. Findley (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) F. A. Phillips (Inf.) Wm. H. Wilder (Rush) Emily Selby (Inf.) Wm. H. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)	E. V. L. Brown (Inf.) W. Allen Barr (Inf.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) D. K. Remmen (Inf.) N. E. Phillips (Inf.) F. A. Phillips (Inf.) Wm. H. Wilder (Rush) Emily Selby (Inf.) Wm. H. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) Thos. Faith (E. E. N. T.) E. K. Findley (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) F. A. Phillips (Inf.) Wm. H. Wilder (Rush) Emily Selby (Inf.) Wm. H. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)	E. V. L. Brown (Inf.) W. Allen Barr (Inf.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) D. K. Remmen (Inf.) N. E. Phillips (Inf.) F. A. Phillips (Inf.) Wm. H. Wilder (Rush) Emily Selby (Inf.) Wm. H. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findley (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) F. A. Phillips (Inf.) Wm. H. Wilder (Rush) Emily Selby (Inf.) Wm. H. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)
3 P.M.	W. Allen Barr (C.C.S.) *Wm. E. Gamble (P. & S.)	H. H. Brown (Ills. Med.)	*J. L. Harper (P. & S.) W. Allen Barr (C.C.S.) *Wm. E. Gamble (P. & S.)		W. Allen Barr (C.C.S.)	Geo. F. Suker (P.G.)
4 P.M.	W. F. Coleman (P.G.)	C. W. Hawley (P.G.)	G. F. Suker (P.G.)	C. W. Hawley (P.G.)	W. F. Coleman (P.G.) Brown Pussey (County)	

\*Special operative eye clinics.

## ABBREVIATIONS:

C. C. S.; Chicago Clinical School, 819 W. Harrison Street.	County; Cook County Hospital, W. Harrison and Illinois Streets.	Abbreviations: Poli.; Chicago Policlinic and Hospi- tal, 174 E. Chicago Avenue.	Rush; Rush Medical College, W. Harrison and Wood Streets.
E. E. N. T.; Chicago Eye, Ear, Nose and Throat College, Washington Franklin Streets. Clinics all day.	Ills. Med.; Illinois Medical College, 182 Washington Blvd.	P.G.; Post-Graduate Medical School of Chicago, 2409 Dearborn Street.	St. Luke's; St. Luke's Hospital, 1416 Indiana Avenue.
	Inf.; Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets, 2431 Dearborn Street.	N. W. U.; Northwestern University, 2431 Dearborn Street.	

# THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS  
OF OPHTHALMOLOGY

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VOL. XIX CHICAGO, SEPTEMBER, 1910 NO. 9, NEW SERIES

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## TREPHINING FOR GLAUCOMA.

BY GEORGE YOUNG, M. D., M. R. C. S.; L. R. C. P.

NEW YORK.

[Illustrated.]

Much interest is gathering around the operation of trephining the eyeball for the purpose of reducing intraocular tension. Simple trephining involves but comparatively slight traumatism, yet the following suggestion reduces it to a minimum. I should like those interested in, and practicing the operation, to convince themselves.

Experiments on numbers of eyes of animals, as well as operations in vivo, show that not infrequently, with the ordinary trephines in use, the disc of scleral tissue, which is best removed in toto, remains adherent at the limbus, necessitating the use of fine toothed forceps and scissors for its removal. It is not quite easy to do this neatly; the edge remains jagged, or the opening turns out smaller than desired, besides the extra manipulation, which is particularly unwelcome where the tension is very high. Many devices and trephines have been suggested, evidently with the object of obviating this difficulty. They are mostly too complicated or involve further steps in the technique than are necessary. I myself planned and had constructed by F. A. Hardy & Co. a trephine which I thought would cut a clean disc. It proved deficient in the essential point and I have discarded most of its constituents and found a far easier and better way of operating.

The trephine I now use can easily be obtained, as it is merely one part of the instrument made for me by Hardy & Co., with the superfluous parts eliminated. It consists, as shown in Fig. 1, of a tubular knife with a very keen edge that cuts the prescribed hole of 2 mm. in diameter. The bevel which produces the cutting edge is exactly 1 mm. long, and a sliding collar which hugs the knife closely can be moved with the finger nail and a sliding (not

rotary) motion. It is easy to place the collar just at the beginning of the bevel, so the trephine will cut 1 mm. deep, and can cut no deeper. It is safe to start this way, although the sclera is rather less than 1 mm. at the point usually chosen for trephining, at the limbus. It is not possible to wound the ciliary body, which is soft and yields before the cutting edge. A short screw thread at the other end of the knife takes a small perforated nut which acts as an excellent handle. Of course, the instrument can be made any length to suit the operator. I like a short one, and my own measures 35 mm., nut and all.

I now operate in the following manner: After the conjunctival flap is cut and laid back over the cornea, a silk stitch is passed through the episcleral tissue just at the point which is to be the

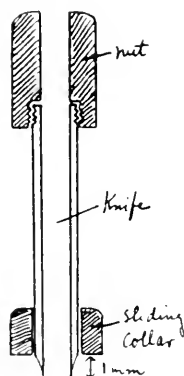


Fig. 1.

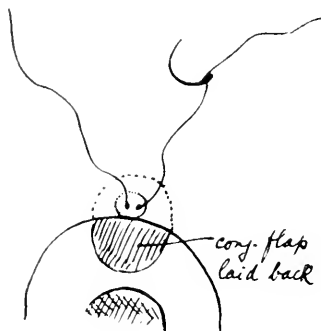


Fig. 2.

center of the disc to be removed, i. e., 1 mm. from the limbus. This needs no further comment. Fig. 2 will show what I mean. The step is easy. We are all doing it in advancement operations. The only point to observe is, not to include more tissue in the stitch than can be comfortably surrounded by the caliber of the trephine. The needle is now removed from the thread, the two ends of which are twisted together and threaded through the trephine from the cutting edge toward the nut. The threads are put on the stretch with one hand and the trephine put into action with the other. While cutting, the thread not only fixes the eyeball, but pulls the sclera, where it is to be cut, well up against the cutting edge of the trephine, and affords a most excellent way of cutting keenly against a firm base. Furthermore, the eyeball is

not indented or squashed, on the contrary, all pressure is taken off it, and the collar makes it absolutely impossible for the trephine to penetrate the ciliary body. It is quite delightful to see how every fiber of scleral tissue is severed cleanly and completely, so that as soon as this happens, the disc comes away at the end of the thread, like a cork out of a bottle, right through the trephine.

For keeping the edge of the knife keen I use a horsehide strop, perfectly cylindrical, which fits the trephine rather tightly, beveled to a rat tail at one end so it can be threaded easily into the trephine from the nut towards the cutting edge. It is pulled right through, and repeating this 2 or 3 times will keep the edge keen as a razor. The strop is impregnated with instrument paste. I have to make my own strop, and hope others will have better luck in getting one made to order than I did! For cleaning I use ordinary pipe cleaners. They can be dipped in olive oil to remove any paste adhering to the inside of the tube, or in water to swab away any debris of tissue or blood after trephining; to dry the inside it is quite sufficient to dip a pipe cleaner in ether and pass it through several times, when the knife will be ready for the next sterilization. It is best to have several knives on hand, as they have to be reset after some use, and that is best left to the instrument maker.

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## A CASE OF CHOKED DISC POSSESSING SOME UNIQUE FEATURES.

BY C. M. HARRIS, M. D.

JOHNSTOWN, PA.

OPHTHALMOLOGIST TO THE CONEMAUGH VALLEY MEMORIAL HOSPITAL.

On January 20th, 1908, Dr. B. E. Longwell of this city called me in consultation on a case where the symptoms had grown progressively worse, until the condition of the patient had become serious, causing him to suspect brain involvement. The patient was a healthy looking man of about thirty-five years of age, who gave a history of being struck over the right eye with a board several weeks before. At that time a competent physician treated him and the wound healed promptly, leaving a scar about an inch in length, extending along the supra-orbital ridge almost to the usual location of the frontal sinus.

For a short time preceding the consultation, mental dullness, diminution in hearing and vision were noticed. During the previous three days these symptoms had become more pronounced, and

several attacks of vomiting had occurred. We found much tenderness over the site of the previous wound and the vision in the right eye was reduced to 1/24, while that of the left eye was 5/6. The pupils were equal, round, about 3 mm. by 3 mm., and responded quickly to light. Other external findings were negative.

On examining the right eye with the ophthalmoscope, the media were found to be clear, the disc was elevated to the extent of at least 3 d., and presented the usual picture of edema. Within a radius of three disc diameters small hemorrhages and spots of exudate were seen and were more pronounced on the temporal side. All the vessels were tortuous and were obscured at certain points by whitish exudate and edematous retina.

The ophthalmoscopic details in the left eye were very similar to those of its fellow, although the disc was not swollen to the same extent and the other lesions were not so prominent. Some writers have made the assertion that the ocular involvement is greater on the side nearest the primary point of intracranial pressure; and later developments showed this to be true in this instance. After observing these affections of the fundi, I advised an early cranial operation for the relief of the supposed pressure.

A few days later Dr. Longwell operated upon the patient in my presence, and the right frontal region was attacked at the site of the original wound. On exposing the skull at and above the supra-orbital ridge, no evidence of a previous opening was seen; but on removing a plate of bone, an abscess was found in the substance of the frontal lobe. In the midst of the pus lay a partially disintegrated piece of wood about three-fourths of an inch long and one-fourth inch in thickness. Further exploration showed that this piece of wood had penetrated the roof of the orbit just posterior to the supra-orbital ridge, indicating that the board had possessed a projecting piece which had entered at the lowest part of the wound, just missing the upper surface of the eyeball. All debris was removed and the cavity cleansed; which was followed by an uneventful recovery. The deafness and hebetude disappeared and the sight gradually improved, although that of the right eye was never entirely regained.

The patient had no difficulty until about one and a half years after the operation, when convulsions became common, he having as many as six in one month, and being unconscious for six hours at a time after some of them.

Treatment by bromides has caused them to cease, but as a



preventive measure it was found necessary to continue the administration of the drug.

Shortly after this time I had the privilege of again examining the patient, and found that the vision in the right eye was 6/12 and in the left eye 6/5. The media in the right eye were clear, the disc had a grayish appearance and a white streak crossed it at an angle of forty-five degrees. No gross changes were noted in the retina; but the arteries were thin and pallid.

The left eye presented clear media, the disc was grayish, especially to the temporal side, the vessels were slightly tortuous and the arteries seemed more narrow than normal.

I believe that the convulsive seizures are due to pressure resulting from tissue changes at the site of the frontal lesion; and if this is true, it brings up an interesting question. While bromides may control the irritative manifestations, why do we not have a recurrence of the ocular symptoms?

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## OSSIFICATION OF THE HYALOID MEMBRANE

BY DR. NICKOLAKI VASSILADES.

Ophthalmic and Aural Surgeon to the Military Hospital,  
BEYROUT, SYRIA.

(Written for the OPHTHALMIC RECORD; translated by  
Casey A. Wood.)

The writer has not had the good fortune to examine or to find a description in the ophthalmic literature at his disposal another example of this complication of panophthalmitis. Moreover, during his long residence and rather close attention to diseases of the eye, both in Syria and Mesopotamia, he has never encountered a similar case. On referring it to Prof. Hacke of Beyrout, he also regarded it as unique. For these reasons it may be considered of some scientific interest.

The patient was a Turkish officer, aged 35, apparently in perfect health and with an exceptionally good history, both hereditary and personal, who suffered from a left *phthisis bulbi* and ciliary pains in his right eye.

When 25 years old he had acquired a purulent ophthalmia which resulted in a panophthalmitis followed by atrophy of the left eyeball. Both eyes eventually became quiet and gave him no trouble for over four years. He was then transferred from a post in the interior of Syria to Mecca, where, ten years after the loss

of his left eye, he was attacked by severe periorbital pains and other indications that he was suffering in his left eye from a revival of the old intraocular inflammation. He consulted a number of ophthalmologists but as the pains resisted all treatment and finally attacked his better eye, he was sent to the military hospital at Beyrout and came under the writer's care.

On examination the left eye was found to be small and to have shrunken within the depths of the orbit; the cornea was opaque; no anterior chamber; tension markedly decreased.

The right eye showed slight and variable congestion, accompanied by attacks of ciliary pain—evidently due to sympathetic irritation.

Although for ophthalmoscopic observation, the writer used a very weak solution (0.005 mgr. to 10 grm. of water) of atropia it appeared to aggravate if not to produce the periorbital pains which were relieved only by a mixed solution of eserine and pilocarpine. Probably a larger dose would have produced an attack of acute glaucoma.

Having agreed to enucleate the offending left eye it was decided, in this case, to fix the globe by means of a suture (instead of the usual fixation forceps) passed through the sclera or at least behind the insertion of one of the straight muscles. The threads in this procedure were, of course, held by an assistant, who turned the eyeball as directed. As the operator was in the act of passing the needle through the eye coats the point encountered a hard, resisting object which he at first thought might be a calcareous lens.

After the excision the writer sectioned the globe, during which procedure a brownish fluid escaped. Immediately afterward the cornea collapsed and then there fell out the lens, small, calcified, and partially covered with portions of the iris to which it was strongly adherent. Finally, the incision exposed a hard, round substance, apparently ossified, weighing 0.36 cgr., and having a thickness of 0.003. This body had the same form as the intraocular membrane and was very dense, sinking to the bottom when placed in a glass of water. Its anterior surface was concave, the posterior convex; it also presented a circular anterior border.

The anterior surface was intersected by several anfractuosités separated from each other by slight elevations. At points the body had a thickness of 0.004. This anterior surface corresponded exactly with the front of the vitreous. At its centre was seen a hard

projection, apparently ossified, thread-like in appearance, about 0.001 in diameter and 0.006 in length. It exhibits two prolongations, unusual in length—a posterior that corresponds to its insertion in the ossified body and an anterior where it had been joined to the posterior surface of the lens.

In other words, the projecting body occupied the exact situation of the hyaloid canal, or canal of Cloquet, and its connection both with the ossified shell and the crystalline body confirmed the belief that the eye exhibited the remains of a congenital defect—a persistent hyaloid canal and artery—which a chronic ophthalmitis had converted into osseous tissue along with the hyaloid membrane. As is well known, a persistent hyaloid canal, with its accompanying vessels, is by no means a rare anomaly and may occur in the human subject without symptoms and even without interference with vision. It cannot, therefore, be regarded as impossible that ossification affecting the hyaloid membrane might also outline (in the manner described) the canal of Cloquet, as well as induce a bony metamorphosis of the tissues joining it to the posterior surface of the lens.

The posterior convex surface of the globular body was smooth and uniform and did not present any of the irregularities that distinguished its anterior aspect, while its relations to the retina, the choroid and the sclerotic were plainly distinguishable.

The circular margin, before referred to, was apparently in close apposition to the lens whose circumference it seems to have bounded.

That the body in question was the degenerated hyaloid membrane there can be no question, *not only because the retina and choroid were separated and easily distinguished from it*, but because the tissues of the persistent hyaloid canal and artery were plainly hardened and discernible. There remained, of course, only the question of the exact character of the metamorphosis—whether it was a calcification or ossification. To settle this query the writer submitted the enucleated parts to Doctor Misk and to Doctor Negre, the latter professor of anatomy and histology in the French college here. A careful microscopical examination was made of the hardened tissue. The report showed that there were present all the essential elements of bone.

Finally, all the evidence was submitted to Prof. De Lapersonne of Paris, who said that the case was practically unique and that he had never encountered a similar instance. Indeed, the only case

that occurred to him at all resembling it was observed by Panas. In a child six months old the crystalline lens had been found imbedded in a deposit somewhat similar to that just described. The other tissues of the eye were unaffected and the discovery of the lesion was quite accidental and made during a general *post mortem* examination.

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## HOMATROPIN: A PLEA FOR ITS MORE FREQUENT USE.

BY LINN EMERSON, M. D.,

ORANGE, N. J.

The old controversy relative to the use of cycloplegics for estimating the refraction is perennial, but I believe their use among careful refractionists is gaining ground steadily.

From a careful study of my case records I find I am using a cycloplegic in a much larger percentage of cases than I was five years ago.

Practically no patient under twenty years of age, and very few under thirty-five, have glasses ordered by me without first having some cycloplegic used.

In school children a one-grain to the ounce solution of scopolamin hydrobromid gives excellent results.

A drop is instilled in each eye and repeated in about 5 minutes. One hour after the second instillation cycloplegia is as complete as when atropin has been used three times daily for three days.

Its obvious advantage is that the patient can resume near work at the end of three or four days.

There are, however, a large number of patients who neither can nor will submit to a cycloplegia of three or four days duration.

These are the cases for homatropin and properly used it is a safe and valuable remedy.

Tweedy and Ringer carefully investigated homatropin twenty-five years ago and reported favorably on its use.

Davis does not recommend the use of the milder cycloplegic such as homatropin, "When needed an efficient one is needed, which is seldom."

Valk does not mention it in his book.

Roosa says, "I do not think homatropin compares favorably with atropin or scopolamin in its effects on accommodation."

May uses a two per cent solution every five or ten minutes for

three or four doses. "While the effect is not so perfect as that produced by atropin it is sufficient for all practical purposes."

Ball states that it is much weaker than other cycloplegics and less reliable.

Swanzy recommends its use in one per cent solution, and while stating that cycloplegia is not complete, he still insists that it is the best drug for the estimation of the refraction.

Lawson's only comment is on its inferiority to atropin.

Noyes says, "To dilate the pupil, cocaine is better than homatropin, while to paralyze accommodation we have no substitute for atropin."

Nettleship does not mention homatropin in his book, while Hartridge mentions it only for its mydriatic qualities.

In Norris and Oliver's system the Junior Snellen recommends its use in one per cent solution. He makes three instillations at ten minute intervals, and affirms that complete paralysis of accommodation ensues twenty minutes after the last instillation.

Hansell and Sweet recommend its use every ten minutes for one hour, attaining complete paralysis fifteen minutes after the last instillation.

Fox uses fifteen grains to the ounce and attains the same results as Hansell and Sweet.

Fuchs considers it little more than mydriatic although the translator has added a footnote speaking of its value in two per cent and three per cent solutions.

The American Text Book recommends a two to four per cent solution every five or ten minutes, four to six times, the examination to be made within one or two hours.

Jackson uses it in the strength of one to forty, one drop every five minutes, four to six times: maximum effect in one hour. He considers it a reliable cycloplegic.

Thorington uses it in two and one-half per cent solution on patients over thirty-five years of age, but says, "in young hyperopic eyes it is waste of time to attempt successful paralysis." He warns us of the danger of false astigmatism.

Landolt says, "a three per cent solution is said to bring about mydriasis in twenty minutes and paralysis of accommodation in half an hour."

From Posey and Wright, page 113, I copy the following statement of Duane: "In my experience homatropin properly applied is in the vast majority of cases full as efficient and reliable as tropin.

I find too that children yield readily to homatropin, quite as readily indeed as adults."

From de Schweinitz I quote as follows: "To use this drug (homatropin) properly it must be employed by cumulative instillation in the strength of eight to sixteen grains to the ounce, one drop of such solution being used every ten or fifteen minutes for an hour and a half preceding the determination and then waiting forty minutes. At the end of this time the maximum effect of the drug upon the accommodation is secured.

"In the opinion of some surgeons this drug is an insufficient paralyzer of accommodation, but if caution in regard to the cumulative instillation is observed and the rule given above carefully followed, very satisfactory results may be obtained."

With these last two authorities quoted I am heartily in accord, basing my opinion on the routine use of the drug for the past ten years. I find, however, that the opinion widely prevails that homatropin is not a reliable cycloplegic. Many of my confreres have been unable to give me any satisfactory reason for this opinion, having given the drug no consistent trial. Many who have tried it having used it in too weak a solution, or neglected the point so much emphasized by de Schweinitz, viz.: cumulative instillation.

The results of Casey Wood's and Edw. Jackson's labors in this field do not seem to be generally known.

Wood's paper, presented to the Pan American Medical Congress in 1893, deals with the comparative results by retinoscopy in a series of thirty-four cases. The visual results are not stated.

Jackson's resume of forty-eight cases appeared in the *Annals of Ophthalmology*, 1901, page 15. In some of his cases several weeks or even months elapsed between the relative findings. However, I may say my results are only corroborative of their pioneer work along this line.

In 1901 I carefully compared the effects of homatropin and atropin in a series of forty cases. The results are shown in the appended table.

The ages were as follows:

5 to 10 years	7
10 to 15 years	20
15 to 20 years	3
20 to 25 years	3
25 to 30 years	7

The comparative results were as follows:

Refraction same under atropin and homatropin.....	29
+ .25 D. S. more under atropin in one eye.....	6
+ .25 D. S. more under atropin in both eyes.....	1
+ .50 D. S. more under atropin in both eyes.....	2
+ .25 D. S. less under atropin in both eyes.....	2
+ .25 D. cyl. more under atropin in one eye.....	1
	—
	49

In but one case was there a difference in the cylindrical correction required. Of forty cases examined thirty-seven showed no greater variation than a + .25 D. spherical.

Since homatropin is a reliable cycloplegic its advantages are obvious while its only disadvantage is the item of expense.

By its use the refraction of young business men and women can be estimated on Saturday (even as late as the evening), and they are able to resume their occupation on Monday morning without loss of time, a most important consideration in many instances.

Among the laity there is a certain prejudice against the use of drops, fostered by the refracting optician, and I regret to say by some members of our profession. Many times we are met with point blank refusal when it is suggested.

This refusal can almost invariably be overcome when we assure the patient that the effect of the "new" drops lasts but twenty-four to thirty-six hours, whereas that of the old lasted ten days or two weeks.

When rapid restoration of the accommodations is imperative I frequently have a one grain to the ounce solution of eserine instilled three or four times at five minute intervals immediately after the estimation of the refraction.

Casey Wood sums the matter up concisely on page sixty-two of his recent valuable work on Ophthalmic Therapeutics.

"I always use atropia whenever I possibly can and particularly if in my judgment the patient would be benefited by ciliary rest as many of our cases are. But for the business man, the clerk, the bookkeeper, the doctor, the school teacher, *et hoc genus omne*, the ten days of ciliary or any other kind of rest is usually impossible.

"It is with them either an examination for glasses of the optician and jewelry store order or a transient cycloplegia."

Some two or three years ago I had two rather disagreeable ex-

periences from the toxic effect of this drug. Examination of the sample used showed contamination by atropin or some alkaloid giving a similar color reaction to the nitric acid test.

Since that time I have discontinued writing prescriptions for homatropin to be used in refraction work, and have all instillations made by my nurse in the office. Not a single case of untoward effect has been observed in my practice since I adopted this plan.

About once in 10 days I get a five grain vial of Mercks homatropin hydrobromid. This with two grains of cocain hydrochlorid is added to five drams of distilled water. This solution is used every 10 minutes for one hour before examination.

In addition to its value as a cyclopegic for the estimation of the refraction, I find homatropin has certain definite therapeutic indications in various ocular diseases.

Since I do not find these indications mentioned in any of the text books, I take this opportunity of calling them to your notice.

In cases where foreign bodies have been impacted in the cornea for several days, with ulceration and some injection of the ocular conjunctiva and possible scleral inflammation one dislikes to use the more powerful mydriatics on account of the attendant discomfort and inconvenience.

A few drops of homatropin causes the symptoms to disappear in 24 or 48 hours and a rapid restoration of the accommodation is most gratifying to the patient.

In case of episcleritis, scleritis and mild iritis, paralysis of accommodation is of greatest inconvenience to the patient, yet you do not dare permit them to go without dilating the pupil. A few drops of homatropin will bring about a cure in two or three days and the patient is able to exercise his accommodation at the end of four or five days.

In case of iritis and iridocystitis in the elderly with increased tension many of which bear a mydriatic poorly.

If homatropin has been used a change to a miotic brings it's good result much more quickly than if a more powerful mydriatic has been used.

In cases of severe inflammation of several weeks' duration, in which the protraction of the case engenders great financial loss to the patient it is of great value to "taper off" the last ten days of treatment, and enable the patient to use his eyes for near work two days after the surgeon decides it is safe to discontinue the drops.



This permits a return to business at least a week earlier than when atropin has been used throughout the case.

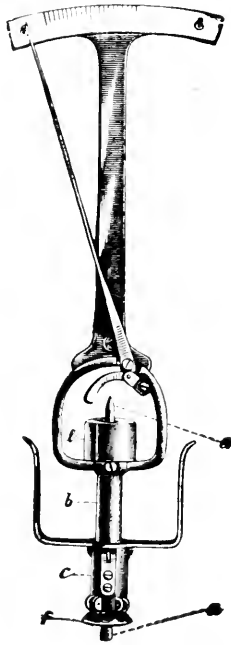
## SOME OBSERVATIONS ON THE USE OF THE SCHIÖTZ TONOMETER.

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NEW YORK CITY.

For years ophthalmologists have appreciated the desirability of having a more accurate method of estimating the intra-ocular tension than by digital palpation, and we have had numerous tonometers devised by ingenious confreres at various times in the past twenty years: among them have been those of Fick, Maklakoff, Priestley Smith, and others. Those who are interested in the history of tonometry will find the subject discussed in the second edition of Graefe-Samisch, vol. iv, p. 606, and in the third volume of Parson's Pathology, p. 1043. But while some of these instruments have registered the intra-ocular tension pretty accurately, none of them has ever come into general use because of their complicated construction or else because to use them required too much time. We have, therefore, continued to employ the *tactus eruditus* in the estimation of tension, and have continued to express the latter in terms of  $T + 1, +2, +3$ , etc., although we have all appreciated the inexactness of this method, and how largely the personal equation entered into the result. In fact, the very name "tonometer" has almost become synonymous in the minds of most of us with some impractical, time-consuming laboratory device: so much so that if you mentioned tonometer to a confrere, the suggestion would be received with an incredulous shrug of the shoulders. I must confess that my mental attitude in reference to the matter was a similar one, so that when Schiötz published his articles on his tonometer in 1905 and 1908 (*Arch. f. Augenh.*, vol. lii, p. 101; vol. lxiii, p. 317), they made little impression on me, and I thought of it as probably one more addition to the large list of such devices which would never be of any practical value. Something more than a year ago, however, when my friend, Dr. E. V. L. Brown, of Chicago, en route home from Vienna, told me that Schiötz's instrument was in constant use in Fuchs' clinic and was giving good results, I determined to get one and give it a trial. I have been so much pleased with my observations with it during the last year that I venture to present

them briefly, hoping thereby to induce some who have not as yet used the instrument to give it a trial. In my opinion it is a most valuable addition to our ophthalmologic armamentarium, especially in everything which pertains to glaucoma.



*Description of the Instrument.*—The long rod (3 mm. in diameter) "a" slips easily up and down in the cylinder "b." The lower end, which is to rest on the cornea, is concave (15 mm. radius); the upper end is pointed: a little below the point on one side is a little projection. The pointed end of the rod slips through a hole in the weight "c"; at one side of the hole is a groove for the projection on the rod, and the weight is fastened to the latter by a slight turn, so that the rod will not fall out when the instrument is held up. The cylinder "b" has at its lower end a foot-piece 9 mm. in diameter, the bottom of which forms a concave surface with a radius of curvature of 15 mm. Upon the upper end of the rod, when the apparatus is in use, rests the curved arm which is the short arm of a lever; by its weight it always follows the movements of the rod up and down. The point of contact of the rod is 4 mm. from the fulcrum of the lever. The long arm is formed by the vertical indicator, 80 mm. long. The relation between the two arms is, therefore, as 1 is to 20; that is, the excursion of the indicator

is 20 times that of the movement of the rod. When the lower end of the rod stands on a level with the concave surface of the foot-piece below, the indicator stands at the 0 point of the millimeter scale above; if the rod moves down 1 mm., then the indicator makes an excursion of 20 mm. Around the cylinder "b" is attached a cuff "c." by the two arms of which, bent upward, the apparatus is firmly held when in use. In the walls of this cuff are little roller wheels which diminish the friction. (These have been found to be unnecessary.)

The foot-piece of the cylinder "b," which is to rest on the middle of the cornea, is concave on the lower surface, with a radius of curvature of 15 mm. Schiötz selected so high a radius of curvature so as to be sure that in all cases the curvature of the cornea was greater than the concavity of the foot-piece: for if the cornea is flatter than the concavity of the foot-piece and rod, the latter would have to descend a little before it touched the cornea, and thus the indicator would make a movement along the scale without any corresponding impression and the measurement would be inaccurate. The apparatus as at present constructed registers somewhat too low, but this is a constant small error, and, therefore, without significance as to the relative value. The apparatus can also be so constructed that the cylinder "b" can be unscrewed and replaced by others with different concavity, as, for example, with a radius of 12 or 10.

When the instrument is used, the patient can either lie on a table or sit in a reclining chair with the head thrown back. In my office I have no difficulty with the patient reclining in a chair and the head thrown back, so that the eyes are directed upward. In fact, I have used it with the patient sitting up in a straight-back chair and head tipped back, though this is a rather tiresome position. Schiötz uses a 2 per cent holocain solution, as this does not dilate the pupil, but I have found that with a solution of cocaine as weak as 2 per cent the procedure was much less disagreeable than with holocain. When tension is present, he instils a miotic afterward. The patient is directed to look directly upward, while the observer separates the upper and lower lids with the fingers of one hand, being careful in doing this to make no pressure upon the eye. With the other hand the observer takes the instrument, holding it by one or both of the two arms attached to the cuff, which slips up and down the hollow cylinder. The foot-piece is brought so as to

rest exactly on the center of the cornea when the cuff is slid down, so as to stand about the middle of the cylinder. In this position the apparatus stands freely, and should be held exactly vertical and exactly on the center of the cornea. The system (including the small rod, the lever, and weight if one is on at the time) then presses upon the center of the cornea, and one reads off from the scale what the indicator registers. Occasionally a speculum is necessary. Three measurements are made, and the average of these three readings is taken.

Different weights are used, marked 5.5, 7.5, 10 and 15. In the first, 5.5 represents the weight of the little rod (2 gm.), plus that of the lever (2 gm.), plus that of the weight (1.5 gm.)—total, 5.5. The weight 7.5 likewise represents the weight of the rod, lever, and weight (2, 2, and 3.5) etc. When no weight is used we have simply the rod and the lever, or 4 gm. in all, which is used in cases of marked hypotony. If the intra-ocular tension is high, the indicator would make no excursion with a certain weight, which, when employed in measuring a normal eye, would give a definite reading. The instrument itself weighs 12 gm.

In taking the tension of an eye, we usually begin by putting on the first weight marked 5.5 gm., with which, if the tension is normal, we get a measurement of about 5 mm. If the tension is high, the indicator may stand at 0 on the millimeter scale above, or even to the left of this. In this case we put on the next weight, or 7.5. Readings on the scale somewhere between 3 and 6 or 7 are the most accurate. For example, if with weight 5.5 the instrument registers 4, while with 7.5 it registers 5, the latter is a safer number to take.

By means of the table of curves accompanying the instrument in which the abscissæ represent the reading of the tonometer, and the ordinates the number of millimeters of mercury, we quickly find the intra-ocular tension. For example, if with the weight 7.5 the instrument registers 5, we find that this corresponds to 35 mm. of mercury.

The four upper curves on the diagram correspond to the weights 5.5, 7.5, 10, and 15. In many instruments there is a lower curve, marked 4, which represents the tension in hypotony when we use no weight. Here the 4 represents the combined weights of the little rod and the lever alone (each weighing 2 gm.).

With the apparatus comes a little metal model to test the instrument before using it. When the foot-plate is rested upon

the model, the curvature of the latter is such that the indicator stands at the null point of the scale.

So much for the instrument. It is made by N. Jacobsen, Pilestraedet 25, Christiania, Norway. Professor Schiötz states in his article that its cost is 15 Kroner, but those I have imported have cost 65 Kroner, or \$17.50 in Christiania. Delivered to me in New York one cost me \$20.00, no duty; the other, \$28.00 (duty of \$8.00). As to the possibility of their manufacture in this country, in a letter from Professor Schiötz he states that the only difficulty would be the testing of them. At present each instrument is most carefully tested before being put into stock, which, of course, is a most important matter.

The reader is referred to Schiötz's article for a fuller description of his method of making the curves accompanying the instruments showing the equivalent in millimeters of mercury of any reading on the tonometer. Suffice it here to say that his experiments were made with fresh pig's and human eyes, into the anterior chamber of which he would introduce a cannula connected with an Esmarch irrigator filled with water. This was hung on the wall and raised 10 cm. at a time, until the pressure reached a height of 110 cm. He then took the tension of the dead eye with the varying weights, and knowing the equivalent in millimeters of mercury to the varying number of centimeters of water, constructed the curves. He had the assistance of his brother, who is Professor of Physics in Christiania, and the curves are marked out with the greatest mathematic accuracy.

Fearing injury to the cornea, Schiötz at first rested the instrument upon the sclera below, between the inferior and external rectus muscles. Finding, however, that his fears as to the cornea were unfounded, he later placed the instrument upon the cornea, and in my examinations I have always done this.

Now as to its practicability. Is it difficult to use or does its use take a long time, or will its appearance alarm a patient? Is it difficult to become expert in its use? To all of these questions I would answer no. Two drops of holocain, 2 per cent, instilled at intervals of two minutes, or preferably 2 per cent solution of cocain (if the eye is not glaucomatous), and the eye is ready. Three observations on each eye can be taken in five minutes. On the part of intelligent patients in my office I never have had the least objection to its employment. Occasionally it tries one's soul to take the tension of some of the stupid people we run across at the clinic, but

I have never yet failed altogether. In a very short time one becomes expert in its use.

Are its observations accurate? Over and over again I have taken the tension of a patient, written down my result, and then had the tension taken by two or three of my assistants, who would write down their observations, and frequently our determinations have been exactly the same, and never has the variation been a considerable one—possibly 1 or 2 mm. of mercury at the most.

One frequently sees movements of the indicator synchronous with the pulse, and in normal eyes, as well as in those with increased tension. These pulsations cause an oscillation of the indicator of 0.5 to 1 mm. on the scale.

Again, if the same eye is experimented on for some time, the tension seems to diminish slightly, as some fluid is evidently pressed out of the eye by the continued experiments. This observation was repeatedly made.

*Normal Tension.*—What is the range of tension in normal eyes? Schiötz, in his first report, stated that the normal tension varied between 24 mm. and 31, averaging about 20. Further use of the instrument for four years, however, led him to modify this, and he now gives it as from 15.5 to 25. Stock put the lowest limit in normal eyes as 12, but found only two cases with so low a tension. He also met with 7 cases out of 100 with tension of 26. In a considerable number of observations by ourselves on normal eyes the tension has varied from 15 to 24. (Table follows.)

TABLE A.—94 NORMAL EYES.

13 mm. Hg.	2 eyes (keratoconus).
14 " "	2 "
15 " "	3 "
16 " "	5 "
17 " "	8 "
18 " "	11 "
19 " "	12 "
20 " "	17 "
21 " "	19 "
22 " "	2 "
23 " "	11 "
24 " "	2 "

I have never met with a tension above 25 in a normal eye, and should be inclined to look upon anything above 25 (certainly above 30) as suspicious.

That is, out of 94 eyes, 80 had tension between 17 and 23. The average tension of these 94 eyes was 19.5 mm. of mercury.

Since this paper was finished, an article by Stock on the Schiötz tonometer has appeared (April, 1916) in a supplementary

number of the *Klin. Monatsbl.*, which I have just read. In it he gives the history of a case of chronic simple glaucoma of both eyes in a woman aged sixty. There was deep excavation of both nerves, narrow nasal fields, impaired vision, and the tension of the right eye was 22 mm. and of the left 25 mm. Stock concludes that these eyes must have been originally physiologically soft; that is, it is possible to have glaucoma where the tension seems to be within safe limits. The observation is an interesting one, and Stock has seen only one such case. I myself have never seen a case of glaucoma where the tension was not above 30.

#### TENSION IN DIFFERENT REFRACTIVE CONDITIONS.

Observations were made on a considerable number of hyperopic and myopic eyes, but no significant difference in tension could be noted. In emmetropic cases the lowest tension observed was 18 mm., the highest, 23. In hyperopia the lowest noted was 18 mm., the highest, 21. In myopia the lowest was 17.4, the highest, 24, except in one case of detachment, which had been under treatment, without any improvement, for six weeks in bed, and with subconjunctival injections of chlorid of sodium and dionin. The tension of the eye with detachment was  $13\frac{1}{2}$ , and of the other eye (high myopia), 20. The tension of another patient ( $-5$  D.) with very recent detachment was 13 + in the eye with detachment, and 15 in the other eye—that is, the tension is apt to be lower in cases of old detachment than in recent ones.

Nor have I been able to observe any uniform difference in the tension of normal eyes in patients of different ages, that is, from childhood up to fifty or sixty.

The tonometer is of the greatest value in establishing the early diagnosis of glaucoma. May I cite briefly two cases?

Mr. S., aged thirty. O. D., marked excavation. Vision, fingers at 5 feet. Field contracted to nasal side. O. S., 20/20. Fundus and field O. K. Tension, O. D., 50 mm.; O. S., 33 mm. After pilocarpin in O. D. tension fell to 37. The tension in the left eye is high, and should be kept under close observation. Three months after iridectomy in the right eye the tension had fallen to 18.

Another patient, female, aged forty-eight. Has marked physiologic excavation O. D., with vision 20/15 and normal field. O. S., glaucomatous excavation: vision, 20/20. Nasal half of field contracted. The tension in each eye was just the same, viz.,  $37\frac{1}{2}$  mm.; that is, way above the danger point. In harmony with this was

the examination with the Bjerrum field. In neither eye did this field reach to the blind spot, going to 9° to the temporal side of the fixing point in the left or apparently glaucomatous eye, and only to 11° in the right or apparently normal eye. That is, in this case there was not a suggestion of glaucoma in the right eye by ordinary methods of examination, the vision and field and fundus normal. But the tonometer shows the tension of both eyes the same, viz., 37<sup>1</sup>/<sub>2</sub>, or pathologic, and the Bjerrum field is characteristic in both eyes, and there could be no doubt but that the patient had glaucoma in both eyes. In fact, if I meet with a patient with glaucoma in one eye I almost invariably find the tension of the other eye above 30, or what might be called the danger point.

The tension in glaucoma cases has ranged from 35 or 40 up to 131 in one case of absolute glaucoma. In one case of acute glaucoma it was 65, and two hours afterward, during which pilocarpin was instilled, with resulting miosis, fell to 33. These cases were met with repeatedly, and were interesting not because the tension fell, but because we could measure exactly how much it fell. In one case of chronic glaucoma the tension was 55 before operating, and three weeks after iridectomy it had fallen to 26. In another case, where an acute attack had been untreated for five weeks, the tension before iridectomy was 93.5; three weeks after operation it was 32.5. In all these cases the tension of the other eye was considerably above the danger point of 30.

Schiötz reports one very suggestive case in his first article (1905). In a patient with chronic simple glaucoma the useful effect of pilocarpin was measured with the tonometer, and in one eye the tension fell from 77 mm. to 36, and was kept there for some time with pilocarpin. Then an iridectomy was made, and afterward the lowest point to which the tension could be brought was 43, even with pilocarpin. It was evident that the pressure conditions were not as favorable following the iridectomy as with the use of pilocarpin alone, an observation which should make us consider very carefully the question of operating in these cases.

*Low Tensions.*—As instances of low tension was one of 10 mm. in a case of cyclitis following extraction, and one of 12 mm. in a case of cyclitis following removal of foreign body which entered in the ciliary region. This eye was subsequently enucleated. In a case of cataract seen recently, where the projection was a little uncertain in one quadrant, the tonometer showed a tension of only 8,



and it was very apparent that we were dealing with a case of detachment. It occurs to me that from its use we can get a hint as to the likelihood of a detachment ever occurring in the second eye. I have referred to a patient met with in my private practice with a recent detachment in the left eye. Tension here was 13, and in the good eye 15. This latter is a very low tension, and I think it very much more likely that a detachment may some day occur in the other eye than if its tension was 20 or 25.

#### EFFECT ON TENSION OF DRUGS.

Appended is a table (B) showing the tension in eight patients in whose eyes were instilled drops of 4 per cent solution of cocain, 1 per cent atropin, 1 per cent pilocarpin, 2 per cent pilocarpin, and 0.25 per cent eserin. In each case the tension was first taken (first test), then a drop was instilled. In one-quarter of an hour the tension was again taken (second test), and another drop instilled. In three-quarters of an hour the tension was again taken (third test), and another drop instilled. In one and one-half hours another drop; in one and three-quarters, final tension (fourth test).

The tables speak for themselves, and simply corroborate the results of Schiötz's observation. In *normal* eyes none of these solutions appeared to have any effect on the tension. Pilocarpin appears to raise the tension slightly at first. The cocain cases, where great dilatation of the pupil took place, did not show any tendency to increase of tension more than those where the pupil dilatation was slight or not at all.

I have several times been asked by my colleagues to translate millimeters of mercury as registered by the tonometer into terms of  $T+1$ , etc. While, of course, it is not possible to do this accurately, one might provisionally suggest the following: Tension from 25—40 mm., as  $T +$  ; from 40—60 mm., as  $T + 1$ ; 60—90 mm., as  $T + 2$ , and anything above 90, as  $T + 3$ , as in cases of absolute glaucoma.

Stock states that cocain is useless in tonometry. Accordingly, we took the tension of five cases first with holocain and then with cocain. In three of the cases the pupils were dilated and in two the pupils were not affected. The tension after cocain was just the same as after holocain. This is true where the eye shows no disposition to increase of tension. In one of Schiötz's cases, however, where there was a tendency to increased tension, the use of cocain dilated the pupil and increased the tension very markedly, so that pilocarpin had to be used energetically to reduce it.

TABLE B.

DRUGS.	First.	Second.	Third.	Fourth Test.
Cocain, 4% .....	20.0	18.0	21.0	18.0
	20.0	18.0	21.0	18.0
	21.0	19.5	21.0	21.0
	18.0	18.0	19.5	21.0
	21.0	21.0	23.0	21.0
	21.0	21.0	19.5	21.0
	14.0	13.0	14.0	15.5
	14.0	14.0	14.0	15.5
	16.5	16.5	16.5	16.5
Atropin, 1% .....	16.5	16.5	16.5	16.5
	23.0	23.0	25.0	23.0
	23.0	23.0	25.0	23.0
	19.5	19.5	19.5	23.0
	19.5	23.0	21.0	23.0
	23.0	23.0	21.0	19.5
	21.0	23.0	19.5	19.5
	.....	13.5	13.5	14.5
	.....	14.5	16.5	16.5
Pilocarpin, 1% .....	15.5	18.0	15.5	14.5
	15.5	18.0	15.5	14.5
	16.5	16.5	18.0	19.5
	18.0	18.0	15.5	21.0
	19.5	19.5	21.0	21.0
	19.5	19.5	21.0	21.0
	16.5	23.0	19.5	16.5
	18.0	23.0	18.0	16.5
	13.5	15.5	13.5	13.5
Pilocarpin, 2% .....	14.5	18.0	18.0	15.5
	23.0	23.0	23.0	23.0
	23.0	21.0	21.0	19.5
	16.5	15.5	19.5	18.0
	16.5	15.5	21.0	21.0
	18.0	20.0	18.0	15.5
	18.0	20.0	16.5	12.5
	19.5	23.0	25.0	23.0
	23.0	25.0	25.0	23.0
Eserin, 0.25% .....	23.0	25.0	21.0	23.0
	19.5	25.0	21.0	25.0
	23.0	23.0	21.0	21.0
	23.0	23.0	21.0	21.0
	21.0	16.5	16.5	16.5
	21.0	16.5	16.5	16.5

The figures are the average of three tests.

In his observation on pilocarpin and eserin Schiötz examined one eye with aniridia and one iridectomized eye, and in these the diminution of the tension following the pilocarpin and eserin was just as marked as in the other eyes, which shows that the effect is not wholly due to the miosis.

Stock examined one case of paralysis of the sympathetic on one side, but found the tension of each eye the same also—an interesting observation.

Two recent and interesting articles giving results of tonometric observations are, first, by Møller, on Sclerecto-iridectomy, in the

Klin. Monatsbl. f. Augenhl., December, 1909, and, second, the article by Stock, already quoted in the recent Beilageheft of the same journal.

#### CONCLUSIONS.

1. The instrument is thoroughly accurate. I have two tonometers and invariably have the two instruments registered exactly alike.

2. Neither refraction nor age has any influence on the tension.

3. In normal eyes the drugs ordinarily used as mydriatics or miotics have no appreciable effect on tension. Neither does cocain.

4. The normal tension varies between 15 and 25 mm. of mercury; anything above 25 is suspicious; anything below 14 is hypotony.

5. The average normal tension in our cases was 19.5. We have demonstrated repeatedly what an unsafe guide as to tension is the finger, for with the *tactus eruditus* a tension is not recognized unless above 35, nor is a minus tension appreciated as such unless as low as 10 or under. Also, an eye with a stiff sclerotic oftentimes gives to the fingers the impression of increased tension when the tonometer shows it to be normal.

6. Its greatest value is in determining low degrees of tension and in excluding plus tension.

I believe the tonometer has come to stay and that it will not be long before the Schiötz instrument (until a better one is devised) will be as indispensable a part of the skilful oculist's armamentarium as is today that other instrument, to the perfection of which, also, Schiötz collaborated so ably with Javal, the ophthalmometer.

I want here to express my appreciation of and thanks for the painstaking and careful manner in which my assistant, Dr. George Young, has made for me the largest part of the observations on which the conclusions in this paper have been based.

#### DISCUSSION.

DR. CHARLES J. KIPP, Newark: I have used this instrument for about three months, and have had considerable difficulty in its employment. Even with cocain there are many patients who will not hold sufficiently still to enable one to make reliable measurements. As to its reliability, I suppose there is no doubt whatever.

## **Reports of Societies**

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SECTION ON OPHTHALMOLOGY AMERICAN MEDICAL ASSOCIATION, ST. LOUIS, JUNE 7-10, 1910. CHAIRMAN DR. WILLIAM CAMPBELL POSEY, PHILADELPHIA.

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### **ABSTRACT OF CHAIRMAN'S ADDRESS BY WM. C. POSEY, M. D., CHAIRMAN OF PHILADELPHIA.**

#### **Visual Requirements in the Public Services of the United States.**

With a view to determining what the existing laws might be regarding the visual requirements in the public services of the United States, Posey communicated with the various heads of the public services for information on the subject, and was impressed with the vagueness relating to all the physical standards and tests, and he was convinced that the Section on Ophthalmology might properly undertake the task of reforming this condition of affairs and cooperate in establishing proper safe standards. The activity of Posey in this matter drew the attention of the War Department to it and the Surgeon General appointed a commission including Posey, and that commission has prepared a series of requirements that will shortly be submitted for the approval of the general staff, and are set out in the paper. The services investigated were the Army, the U. S. Military Academy, Mercantile Marine, Revenue Cutter service, the Life Saving department, the Coast and Geodetic Survey and pilots in both the federal and some of the state and municipal services. In investigating the mercantile marine it was found that only officers of steamers and sailing vessels of over 700 tons gross, and vessels of over 100 tons carrying passenger are under federal supervision, bar or branch pilots being under state or municipal authority. The surgeon general of the Marine Hospital Service, now that the matter has been brought to his attention, has arranged to apply the proper tests and to take the matter up with the Department of Commerce and Labor, whose function it is to create proper standards, to authorize thorough examinations in this service. In all the services investigated it was found that the requirements were meager and perhaps not thoroughly carried out. The Civil Service Commission has supervision over the examinations in some of the services. Applicants may be required by this com-

mission to pass an examination by the Marine Hospital Service before appointment, but the Commission has not established any definite standards. Similar information was obtained by Posey in regard to state and municipal requirements. California requires that applicants in the pilot service must be examined by the Marine Hospital Service. New York has some requirements that seem to be rather loosely carried out, and the pilots of that port are said to be thoroughly organized and watch legislation in Congress regarding their ancient rights and prerogatives. Pennsylvania, largely through the efforts of Posey, who has examined applicants in this service for years, now has a good law with an efficient standard. It is believed by Posey that it will not be easy to influence legislation either in Washington or the various states, and he proposed that a commission be appointed from the Section to cooperate with the Department of Commerce and Labor and the Marine Hospital Service to establish proper standards and devise proper tests.

A resolution to establish such a commission was passed and carried to the House of Delegates, where it was approved.

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#### REPORT ON TUBERCULOSIS AND THE EYE.

##### **Tuberculosis and Eye Diseases.**

The report of the Committee for the Study of the Relation of Tuberculosis to Diseases of the Eye, as presented before the Section on Ophthalmology of the American Medical Association by its chairman, W. H. Wilder, M.D., Chicago. The idea was to accumulate enough, through the cooperation of a number of observers, of data on the subject to furnish better results than could be reported by isolated observations of single individuals. The plan included a thorough physical examination of the body in each case to determine whether tuberculosis existed and whether the eye disorder could be credited to this cause. It is one thing, however, to show that an individual is tuberculous and another to show that the eye disease is tuberculous, yet the presumptive evidence may be strong though absolute proof is lacking. Most of the observers declined to use the Calmette test on account of its possible dangers, and the physical examination and the simple V. Pirquet test were relied on in many cases. Wilder does not believe that the fear of the conjunctival test is altogether well founded and will give his ground for this in a future personal communication. A number of conditions, in 114 cases, are reported on. In some of these the results were negative,

but in 59 cases of keratitis, episcleritis, scleritis, and sclerokeratitis, 56 gave positive evidence of being tuberculous, and the frequency of tuberculosis in some part of the body associated with such eye conditions, and the local reaction of the eye in such cases with the use of the subcutaneous test was of interest. If it were possible to study all such cases that occur in a year or two in a large hospital or clinic, some interesting conclusions might be derived.

*Discussion.*—Dr. John Green, Jr., St. Louis: Under the head of keratitis reference is made to nodular keratitis, nodular infiltrates, etc. It seems to me the term nodular in connection with tuberculous corneal opacity should be abandoned, in view of the fact that nodular as qualifying keratitis has come to have a definite clinical significance. Greenouw has used the term nodular in describing a peculiar chronic nodular affection of the cornea, characterized by the presence of discrete subepithelial masses in the central part of the cornea, and the term has been applied by subsequent writers on this condition. The disease is extremely rare, only 50 cases having been described in the literature of tuberculous origin. Confusion is bound to arise from this employment of the term nodular in connection with the cases described in this report.

### **The Etiology of Squint.**

Dr. W. Zentmayer, Philadelphia, reviews the theory of the etiology of squint, especially the more recent ones, which seem to contradict Donder's theory which was prevalently accepted 25 years ago. He tabulates a number of cases and compares them with the statistics of Worth, but concludes that the theory of Donder is best supported by the facts. He says: "Convergent strabismus is associated with hyperopia in over 95 per cent of the cases; the average degree of refractive error is much higher in a series of cases of hyperopia with convergent squint than it is in a series of cases of hyperopia without squint; there is usually a difference in the refractive error in the 2 eyes sufficient to unequalize the visual acuity, and thus favor a deviation of the more defective eye; in a considerable number of cases the correction of the refractive error relieves the squint. (I believe that this number would be greatly increased if glasses were prescribed as early as the third year of life. Worth has shown that it is perfectly possible for them to be worn at an even earlier age.) The fact pointed out by Donder, that a convergent squint can be produced by placing before the eye a concave glass; that divergent strabismus is usually associated with myopia, and that the same process of reasoning by which

it is shown that hyperopia is the cause of convergent strabismus serves to explain the causation of divergent strabismus by myopia." Zentmayer believes that when one approaches the subject unbiased and considers the facts he finds the accommodative theory according best with them. When it fails it can be explained by other known causes of divergence, such as congenital palsies, which he believes are more common than generally supposed, structural defects, congenital amblyopia, etc.

*Discussion.*—Dr. C. D. Wescott, Chicago: It is quite likely that there are two causes evinced in every case of squint. The multiplicity of opinion indicates a variety of causes, and as Dr. Zentmayer suggests, some writers on the subject have been influenced by bias or have drawn conclusions from too few cases. We need not long consider the opinion of one who without cycloplegia finds 23 emmetropes in 67 cases of squint. I cannot help feeling that the admirable idea of Worth has been the result of an effort to establish a theory rather than a careful study of squint. My experience indicates that convergence excess induced by excessive accommodation in hyperopia is the cause of a large number of the cases. If in addition to this we have defective vision or more complicated refraction in one eye we have another potent cause. I believe with the essayist and with Duane that the undeveloped fusion faculty is often the result of squint. Anatomic conditions also favor squint. Dr. Risley has called attention to the formation of the head and the direction of the axes of the orbits in both dynamic and static squint. Difference in the amplitude or elasticity between accommodation and convergence should also be remembered as a factor. Comitant squint may exist in any case where vision is practically equal and the refractive error in each eye is practically the same. Constant squint is the result of low or more difficult vision in one eye. I do not wish to undervalue the work of Worth, but I agree with the essayist that the results of his treatment do not prove the correctness of his theory as to the etiology of squint.

Dr. G. C. Savage, Nashville: The fundamental, underlying essential of binocular single vision is corresponding retinal points, and the non-existence of this is the cause of that form of squint which no man ever has or ever will correct. The maculae at the crossing of the vertical and horizontal meridians should correspond with each other. A nerve fiber from the right macula may be followed to the commissure, across the commissure and on until it reaches a cell of the left eunus. A fiber may be traced from the

left macula through the same path until it terminates in the left cuneus. A double image means a double impression. The double impression carried along these two nerve fibers to a single cell means a single sensation, and therefore means that the images have been fused. Unless common brain cell connection exists there is no such thing as binocular single vision. Tracing the fibers to separate cells in the same cuneus, or finding that one macula is connected with one cuneus and the other with the opposite cuneus, would mean double sensation and impossible fusion. Corresponding retinal points mean common brain cell connection. In the absence of this there can be no fusion. We know a case of squint depends on want of common brain cell connection because of two things: the child squints at birth and from that time on; secondly, whether in a child, a youth, or an adult, one eye sees as well as the other alone. That I call insuperable squint. You may get them close together but they will not fuse because of want of common brain cell connection. If the squint occurred in the second or third year you will find that vision in the crossing eye is low, which grows less year by year until there is no vision in that eye. In this case there is a common brain cell connection, but because of factors that lead to divergence, convergence, elevation or depression, one image must be suppressed, and the power of suppression becomes perfect; but we can train the blind eye out of its blindness after operating. Fusion is a power of the mind. There are fusion centers and over these the fusion faculty of the mind presides. Each fusion center has under control only one muscle.

Dr. L. Emerson, Orange, N. J.: There is no opportunity for controversy between the theories of Worth and Donders. There is without doubt a fusion faculty, and a point not clearly understood is that there may not only be an absence of the fusion faculty, but a deficiency. I have never seen a case of squint which did not show the fusion faculty to be either absent or deficient, and this in connection with hyperopia will account for nearly all forms of convergent squint. The deficiency of the fusion sense explains why we have squint without refractive error, and these can be cured by proper methods. There is a perfect cure, yet with the stereoscope or amblyoscope it is impossible to get fusion up to the second or third degree, showing deficiency of the fusion sense.

Dr. W. Zentmayer, Philadelphia: I do not doubt that a fusion faculty exists and that its absence may be the cause of certain cases of convergent squint.



### The Advancement Operation in Squint.

Dr. V. H. Hulén, Houston, Texas, says that there are certain requisites for the ideal operation for squint, as he sees it: First, the method must be simple and expeditious; second, when the operation is done under general anesthesia the determining sutures should be under subsequent control that any possible deviation may be easily corrected when the true position of the eyes is ascertained; third, the scleral suture should not depend in the least on the episcleral or conjunctival sutures for its support; fourth, one suture firmly introduced into the sclera is sufficient and it should be placed with the tendon insertion in view and before severing the muscle; fifth, the suture in the tendon must be firmly lodged to avoid a tendency to slip or cut out, but must not be looped or knotted to the muscle so as to impair the vascular supply of the tissues or make its removal difficult; sixth, and this is very important, the tendon and globe should not be pulled into the position for fixing by the process of tying the sutures. This rule, old in surgery, is, he says, violated in nearly all the methods for advancing known to him. He describes an operation which, as subsequently modified by himself to a slight extent since his first use of it five years ago, he thinks, seemed to meet the requirements. He calls attention particularly to its simplicity, to the minimum amount of rheumatism, and the accuracy and security obtainable from his method of anchoring the scleral suture. The vertical introduction which he uses is decidedly advantageous, and the efficient bite of the tendon suture looped across the under surface of the muscle, and the perfect control of the parts by means of traction sutures which are secured without additional suturing, and the advantage of having a pair of perfectly placed sutures to be used if required for correcting any overeffect following the primary operation, are among the meritorious features which he claims.

*Discussion.*—Dr. H. H. Briggs, Asheville, N. C.: The great variety of principles and methods employed in shortening an ocular muscle is evidence that no one is satisfactory or adequate. If there were only one it doubtless would have been discovered before. The essentials of an operation may be stated thus: It must be done without danger to the vision and with the least chance of infection; knots should be reduced to the minimum and dissection limited; the globe must be so rotated as to maintain the visual axis in the primary position after convalescence; the tendon must be maintained in the new position until adhesion takes place. The

cosmetic effect must be good. I have not tried the method of Dr. Hulén, but it has the advantage of practically one suture, placed previously to severing the tendon. The counter tension on tendon and globe is unique and should be serviceable. A disadvantage may result from not placing the scleral sutures in the proper position or one side may cut through, leaving the attachment more on one side of the tendon than the other, but it avoids not attaching the muscle directly forward in the same meridian.

Dr. G. C. Savage, Nashville: I want to congratulate Dr. Hulén on his suture and condemn him on cutting the tendon. He should not cut the tendon and then he would have a beautiful Laglize flat advancement operation, as described in Norris and Oliver or in a smaller book of mine. In connection with this or any other stitch operation let me advise you to tie it over a Price suture plate. It will not cause irritation and will be easily removed.

Dr. F. C. Todd, Minneapolis: I believe in the tucking operation and prefer not to cut off the loop of tendon. The vertical suture is a valuable feature. The objection is that the pull is along the line of the muscle fibers so that the degree of effect cannot be properly controlled. This objection can be overcome by inserting a suture in the edge of the tendon in the manner I do with my tucking operation, using a catgut suture which will be absorbed. Thus, there will be an anchorage against which to pull, giving definite, permanent control.

Dr. Mark D. Stevenson, Akron, Ohio: The operation has much to commend it. The simple use of traction sutures is unique. There is no reason why both threads should not be used, and if oiled by some sterile oil will slip through more easily, will absorb and carry less fluid into the canal, with less danger of infection. If one thread should break the other can be used. In *Ophthalmology*, July, 1906, I described the best position for scleral anchorages. The sclera is thickest quite near the cornea and at the muscle insertion. The scleral suture should be made strong enough, but anyone who will make these sutures through pigs' eyes will be alarmed to find how many of them go entirely through the sclera. I think Dr. Hulén's hold on the tendon inadequate except where low degrees are to be corrected. It could be improved by a loop on upper and lower threads of tendon, the cross part of the loop assisting in grasping the tendon fibers so as to support the traction part of the suture.

Dr. John Green, Jr., St. Louis: On the basis of a single experience I may say that it appeals to me as being decidedly a simple

operation. The scleral suture can be easily and exactly inserted, as the tendon insertion, which serves as a landmark, has not been interfered with. When you ask the assistant to draw on the traction sutures you will be surprised and gratified at the ease and exactness with which the tendon is brought into position. After the operation is completed the apparent traumatism is hardly any greater than after a simple tenotomy.

Dr. E. C. Ellett, Memphis: It has been demonstrated recently that in these advancement operations you do not really advance the tendon at all, but the tendon attaches itself solidly from the point of new attachment back to the old point of attachment. If that be true it seems to me a great deal would be obtained by abandoning this scleral anchorage and fastening the stump of the cut muscle at the site of the original insertion, which is very much easier to do.

Dr. W. H. Hulen, Houston, Texas: I have described in the paper the procedure to which Dr. Savage refers, and have used the plan in some cases of heterophoria where a large effect is not necessary. It can easily be done by placing and tying the sutures without severing the tendon. Dr. Todd will find that by putting the suture in vertically, the loop under the tendon, as I have described it, will give sufficient friction clear across and there will be no tendency for the traction sutures to cut out. Dr. Ellett may be correct, but the action of the operation is principally mechanical, and by introducing the scleral suture far forward you get a much greater effect without sacrificing so much of the tendon. One of the great advantages of my plan is inserting the scleral sutures before cutting the tendon, thus avoiding getting the new insertion too high or too low. If the sclera is thin the suture must not be placed too deeply, and to broaden the loop the suture may be entered twice, so that the tendon will not be bunched when the fixing sutures are tied.

### **Cataract Operations.**

Dr. J. L. Thompson, Indianapolis, reports his experience with cataract operations. He calls attention to certain important precautions, especially the need of careful investigation as to the general physical condition of the patient before operating. He mentions cases of obscure malarial and typhoid infection pre-existing which were followed by disaster, and he says he has had very poor ultimate results in chronic hard drinkers. Women who suffer much for years after the menopause with flushed faces and

eyes are not good subjects for cataract extraction. One or two cases of sudden death from undetermined cause have occurred after the operation under his observation, and it was difficult to convince the friends that the operation was not responsible. Other post-operative sequelae, such as mental disturbance, chorioiditis and glaucoma are mentioned. He advises preliminary iridectomy as the safest method, but an iridectomy combined with extraction is a very different matter. With the iris healed and no synechiae, the subsequent extraction is nearly always successful. It is his firm belief that if a preliminary iridectomy is made and followed in 2 months or more by the extraction of the lens the loss would not exceed 1 per cent. He considers extraction of cataract in the capsule the most difficult and dangerous of all methods. He has done the operation twice unintentionally. In both cases the patients were ministers. In one the lens presented immediately after the corneal flap was made and rolled out. The second case only differed from the first in the turning of the lens on its axis and a little assistance in its extraction. The results in both cases were good. There is a great difference, however, in extracting the lens in its capsule when it has, from some cause or other, become loosened already and trying to loosen its attachments. He thinks that no one but an expert should attempt this operation.

### **Cataract in Capsule Extraction.**

Dr. G. C. Savage, Nashville, Tenn., reproduces his description and illustration of his cataract-in-capsule detacher which was given in the *Journal A. M. A.*, October 9, 1909. He here describes the separate steps of the operation for the detachment of the cataract in its capsule as modified by himself. He makes the following claims: Besides the instrument mentioned, the method of fixing the eyeball through three vital steps of the operation, the method of detaching the cataract, the method of doing a small iridectomy and the plan of transfixing the cataract from behind as it begins to emerge, and lifting it out of the eye, the pressure ceasing after the transfixion, are all claimed by him as original modifications. He thinks that this operation, to which the reader is referred, is, on the ripe or unripe human cataract, the easiest and safest of all methods of extracting the cataract in its capsule.

*Discussion.* Dr. Hilliard Wood, Nashville: My experience with the method of Dr. Savage is confined to 13 cases. Objections to the operation may be stated as follows: It involves an appreciable degree of traumatism over the extra-capsular method with

increased post-operative reaction. It is not suitable in nervous or restless patients, because of increased danger of loss of vitreous. The formation of vitreous opacities was found in the three cases examined some weeks after operation. It is said they are also common after the Smith operation. The advantages are that unripe cataract may be removed, and removal is safer than artificial ripening: it removes the possibility of secondary capsular opacities. The operation is not difficult, no failures being reported in the 50 operations done by several operators in our city that could be attributed to the operation itself.

Dr. A. E. Bulson, Jr., Ft. Wayne: Altogether too many operators are inclined to report their successes and purposely neglect to report their failures, with the result that the inexperienced operator looks on the operation as one devoid of much risk or he is led to draw wrong conclusions in regard to the operation. Loss of vitreous has led me to abandon the speculum and to use a narrow lid-elevator, which prevents squeezing. Frequent prolapse of the iris following the simple operation has led me to adopt a preliminary iridectomy some weeks before extraction. I do a dissection in fully 50 per cent. A few operations in capsule done without intent has not led me to believe it is the operation of choice, and 25 per cent of 25 cases examined by me which had loss of vitreous by this operation of Col. Smith has led me to believe that it is not the operation of choice for American operators and should not be the routine practice. Not only should the eye be studied, but the general health and temperament of the patient, and ultimate effects should be considered in deciding when and how to operate.

Dr. J. L. Thompson, Indianapolis: In cases operated on by Dr. Green, which I examined, I found the pupils clear, no threads of capsule and no synechiae, with acuity of vision equal to 20-xx in many of them. The incision was made with one sweep of the knife. It is an ideal operation but should be made only by those who have been thoroughly drilled and in countries where cataracts are numerous and operators few. I shall not adopt the operation, but will send my cases of immature nuclear cataract to operators experienced under the eye of Major Smith. Dr. Savage's method seems to me to be the most complicated and dangerous of all the methods. It requires two assistants and a detacher which is manipulated inside instead of outside the cornea as in the Smith

method. Dr. Savage says his operation on pigs' eyes will not suffer by comparison with the Smith method. But it is men's eyes and not pigs' eyes that we are operating on, and not dead eyes, either. They should be alive in order that the ultimate result may be followed up. I must again emphasize the advantages of preliminary iridectomy. It tells us about the behavior of our patient and there is no hemorrhage in the anterior chamber to obscure the view. With the iris healed we can operate with greater confidence and success.

Dr. D. W. Green, Dayton: Several instruments have been devised from time to time embodying all the principles of the so-called detacher, and there is little original in his method. He catches the internal rectus instead of catching the eyeball below. He has two assistants, which is an objection. His method of manipulating the cataract is objectionable because the capsule is so liable to rupture when pricked. The instruments and the methods of Lucca, Gradenigo and Basso embody all the principles of Savage's method, and Dr. Fox's corelysis instrument, barring the size and lacking a curve in the shank, is the same as the detacher. When he has detached the cataract he is only half way through and must deliver it, while the Smith operation is completed by external manipulation and often by one movement. I should have to see a demonstration before I would pass an instrument into the eye, and be at the mercy of the patient even for a few seconds.

Dr. L. Webster Fox, Philadelphia: A cataract operation should always be regarded as one of the most delicate operations in surgery, with many difficulties and obstacles. One should welcome a new method which will overcome these obstacles. Dr. Savage with his skill may do this operation successfully, but is it a safe method for the average operator? His only original claim is that it robs the extraction in capsule of many of the difficulties of the Smith operation. I attempted the same method with an instrument modeled after the cystotome of Jaeger, and later in connection with Dr. Greene with the instrument mentioned by him, but the results being negative they were abandoned. I must still be convinced that his instrument can be used safely in the narrow confines of a corneal or scleral incision with the hook more or less obscuring the field of operation, but if it can be done successfully, Dr. Savage has added something to the technic of cataract operation which we will all welcome.

Dr. G. C. Savage, Nashville: While Dr. Fox does not remember it, I suggested his corelysis instrument to him in 1906. Without the use of pigs' eyes and the experience gained with them I should not have attempted my operation. You learn by such operations just how to make the double movement with my detacher. In answer to Dr. Greene, you can tear loose the ligaments with the detacher, and you tear at least 75 or 80 per cent of it with the first two movements, and therefore lighter pressure attends the second movement. There is no resemblance between my instrument and those mentioned by Dr. Greene. Preliminary iridectomy is good, and in connection with my instrument would make an ideal operation. I have less irritation than with any other operation, and I turn the eye loose on the third day with only a pad of gauze in front of it, and let the patient wink, move the eye up or down with the other eye, etc. With a small iridectomy you are likely to have prolapse of the iris unless you use atropin. I have had floating opacities in some of my 27 cases, but I am sure they were there before, because the eyes had no irritation about them. My confreres had good results in all of their 23 cases, but one of mine was lost with a choroidal hemorrhage from vomiting a few hours after the operation. In one case the white, fluffy formation described by Dr. Knapp occurred in an eye free from irritation otherwise. It disappeared, but the eye was not useful.

### **The Prevention of Blindness.**

A plea for a more general public movement, somewhat resembling the anti-tuberculosis crusade, for the prevention of blindness, is made by Dr. F. Park Lewis, Buffalo. He speaks of the insufficiency of the data in regard to the prevalence of blindness in the United States census and other statistics, and proposes a standard defining blindness offered by Dr. Lewis Stricker in an article written for the Ohio State Medical Association. Stricker would define blindness to be of three degrees: First, total or absolute blindness with abolition of the light sense; second, what may be called relative blindness, in which the fingers cannot be counted at three feet or one meter; and third, practical blindness in which moving objects may still be discerned at three meters, but the field of vision is so impaired that the patient can get about only with great difficulty. Lastly, only those are to be considered as blind who are hopelessly or incurably so. Many individuals with uncomplicated cataracts have been included among the blind in statistics who are later removed from this category by successful operation. He asks for better hospital records of cases and more care in stating existing

conditions, history, etc. In several important schools for the blind no records are kept of the causes of blindness and no ophthalmic examiner is employed. If careful records were made in all public institutions we could get a very valuable aggregation of facts from which we could draw useful conclusions, and if those in charge knew their work was open to public criticism greater care would be employed. In many cases the causes of blindness are given so unscientifically as to be of very little value. There should, he thinks, be a uniform record blank in every institution for the blind, and each physician treating the eyes should keep a careful record, which would be a simple matter if duly attended to. The social aspects of blindness and its treatment are also noted. Much of the blindness existing would be preventable if these were properly attended to. He makes several recommendations in regard to preventable industrial accidents, as well as in regard to the prevention of hereditary blindness and the urgent necessity of the prevention, as far as possible, of marriage of those whose progeny would be likely to be thus defective. A better training in ophthalmology is also needed. Many eyes are lost from maltreatment, and many who attempt difficult operations are insufficiently trained, verifying the classic though monstrous dictum of Baer, that "it takes a hatful of eyes to educate an oculist." The vital importance of proper architectural construction and other conditions to protect the eyes of school children is mentioned by the author, who suggests the appointment of a committee of the Section on Ophthalmology of the A. M. A., conferring, if thought wise, with one from the American Educational Association, to take up this subject.

*Discussion.*—Dr. A. E. Bulson, Jr., Ft. Wayne: One of the ways to get at this question would be to enlarge the sphere of usefulness of the present committee on the Prevention of Ophthalmia Neonatorum. I think Dr. Lewis has prepared some resolutions on the subject. Prevention of blindness from trachoma is important. Owing to laxity of inspection cases of trachoma get into this country. Prevention of blindness from industrial accidents may be accomplished by proper education of labor organizations as well as of employers of labor. I hope therefore the scope of this committee will be enlarged and that the section will stand sponsor for the work.

Dr. Lucien Howe suggests that it would be advisable to formulate a plan for an American Association for the Prevention of Blindness.



Dr. J. A. Donovan, Butte: About eleven people a day are killed in the United States by the railroads, to say nothing of other industrial accidents, and I believe we should have a separate committee to consider this. In our section where we produce copper, injuries from blasts have been reduced two-thirds through education of the people. Employers are anxious to avoid them, as claims for large amounts are made every year.

Miss C. C. Van Blarcom, Secretary, New York Committee on Prevention of Blindness, New York: The question of the prevention of blindness is not a single definite piece of work, but a complex, intricate undertaking involving medical and social problems. We look to the medical profession to initiate and guide the movement, but ultimate results will only be accomplished through harmonizing and co-ordinating the forces referred to in Dr. Lewis' paper, physicians, sanitarians, educators and social workers.

Mr. S. E. Eliot, Organizer Russell Sage Foundation, New York: I have been appointed to go into the different states, and with the nucleus already furnished by the committees on the prevention of Ophthalmia Neonatorum to organize associations on the lines of the New York Association, of which Miss Van Blarcom is a representative. As I go on the ground in any state I shall endeavor to ally all agencies connected with the subject, such as health boards, schools for the blind, public schools, and social workers, forming associations partially of medical men and the others named who are working for this one end.

Dr. Mark D. Stevenson, Akron, Ohio: In dealing with the question of the prevention of blindness this section ought to have a committee entirely from its own members. The Committee on Ophthalmia Neonatorum should be a separate committee, possibly related to this one by having its chairman a member of this committee. This section ought to be identified with and be responsible for this important movement for the prevention of blindness.

### **Lenses for Close Work.**

Drs. M. D. Stevenson and E. M. Weaver, Akron, Ohio, discuss certain phases of lens prescribing. The muscle conditions and static refraction for distance need first to be correctly determined, but the latter is usually impossible without the use of cycloplegics except in some cases of myopia and in some persons past middle life whose accommodation is weak or easily controlled. The common advice to young people who suffer from continuous close work,

though for ordinary purposes their vision may be satisfactory, to use lenses constantly, is not upheld by the authors. It is better, they think, in many cases, to advise constant use of the lenses for the first few weeks or months until unnecessary ciliary contraction has more or less disappeared, and then use them only for near work. It is the added strain in near work which causes the distress in the majority of young persons. In case of impairment of general health, lenses may be useful for close work, but bifocals would be often useful in such cases, especially for students. Too strong lenses discourage return of function to the weakened muscles. In myopia it is often best to have the patient wear the lenses only for distance, and if over 2.00 or 3.00 D the use of bifocals is often advisable, care being taken to avoid too strong a segment. When the patient does not have binocular vision or uses one eye for distance and the other for near, attempts to equalize them will, they think, be useless and harmful to the patient. The far and near point showing the amplitude of accommodation should be ascertained in prescribing, and the authors describe the tests for this. Having determined the ametropia for distance and in special cases the amplitude of accommodation, the distance which the patient prefers for close work should be ascertained. The range for the test object should next be found. How far the letters can be comfortably seen, how close they can be easily read, and the best distance at which they can be seen should be ascertained. Something must be allowed for vocation. There is a temptation to prescribe too strong lenses for close work to avoid too frequent changes of lenses, but these add to the convergent strain. A good average distance is about 37 cm. Accommodation is strongest in the young and lessens with advancement of age. The time when the eyes need special assistance varies, much depending on general health, vitality, occupation, etc., and judgment and care must be exercised. When patients past middle life complain only in doing close work and have normal or nearly normal sight for distance, the former only may be corrected and bifocals should often be prescribed, though worn only for close work. Even a weak lens correcting the ametropia is preferable to a plain lens. When there are symptoms of the asthenopia, headaches, etc., two pairs or a bifocal should be prescribed. The patients dislike bifocals at first, but come gradually to prefer them, becoming accustomed to the blur of distant objects through the lower lens and the doubling shown when looking through the margin of the

segment. Very large segments are required only for those who must move their eyes much in their work. They can scarcely be made large enough for bookkeepers and some dentists. Small segments for distant vision may be placed in the uppermost part of the lens, the remaining large part being for close work. Experience has taught that the segment should be only slightly below the pupil and that all lenses for near work, especially bifocals, should have the top tilted considerably farther away from the face than the bottom—a large reading angle. The patient should learn how best to hold the head and eyes, as for many of them there is only one best position for sight.

*Discussion.*—Dr. A. G. Bennett, Buffalo: I would take exception to the statement that it is a waste of labor to try to make a patient with anisometropia use both eyes. I have had several instances of patients with one eye myopic and the other hyperopic or emmetropic using the emmetropic eye for distance and the myopic eye for reading. Some years ago I followed the advice of Dr. Stevenson in this respect, but in a case with a difference of 3 D I thought I would make the patient use both eyes. She had entire loss of accommodation. I gave the patient a pair of hook-ons of 3 D to use before both eyes when reading or doing close work, with full correction for distance. Then I gave her weak physostigmine to use at night. In four weeks I was able to reduce the hook-ons half a diopter. I continued that method of reducing the strength until in nine months she had full accommodative power. I have carried that out a good many times with success.

Dr. A. E. Bulson Jr., Ft. Wayne: The accommodative power is influenced by so many factors that no hard and fast rules can be laid down in prescribing lenses for close work. Health, temperament, vocation, habits, the amount and kind of error, may affect the muscular tone, and these factors may be inconstant, but must be taken into consideration. Some are uncomfortable when wearing full correction, but derive no lasting benefit from any correction for the reasons given. These require regulation of the habits or conditions of use. In non-presbyopic cases we are never justified in giving more than the full correction of the static refraction. The lowered accommodative power requires something more than the effect of lenses. Rest is important in these cases. The emmetropic eye should possess the accommodative power for near work, as otherwise something beside lenses is required. The ametropic eye may possess all or more than emmetropic accommodative

power, and the determination of the lens required resolves itself into an estimate of the surplus accommodative power under average conditions, which taken from the total refractive error, indicates with a fair degree of certainty the lenses required. The ophthalmologist who obtains the best results will look beyond objective and subjective findings before prescribing lenses.

Dr. Allen Greenwood, Boston: In young people who have a fair amount of esophoria it is a good rule to require glasses for a time for reading. The patient with exophoria will seldom require glasses for near. Young people with uncorrected anisometropia may be made absolutely comfortable with the proper correction for each eye.

Dr. S. L. Ledbetter, Birmingham: The blur that occurs in passing from the upper to the lower lens with bifocals may be obviated by placing the bifocal segment with the apex down instead of up as is usual, as with the base up when you reach the point of the disappearance of the image it produces a deflection so that the object is seen through the lower segment before distinct vision is lost through the upper. It can be made in the kryptok in the same way, and does not look bad.

Dr. G. C. Savage, Nashville: If you have a case of anisometropia you can correct the error in each eye, but if you fail to tell the patient he must look through the center of the lenses he will get into trouble. In a case of hyperopia with a difference of 3 D between the two eyes, if the patient looks through the center of the lens there is no prismatic effect anywhere, but if he looks one-fifth of an inch above the centers and he gets three degrees of prismatic effect vertically in the eye with the highest degree of hyperopia; likewise if he looks one-fifth inch below. The muscles cannot bear that sort of displacement. To detect weak accommodation place the patient behind the phorometer and if he has orthophoria for distance and esophoria for near, that speaks for weakness of the ciliary muscles which can be cured by gymnastic exercises. Instead of giving presbyopic lenses put him on exercises by means of concave spheres. When they are put on the patient should be put 8 or 10 feet from the letter or figure to be looked at, and he should be told to raise and lower the lenses rhythmically, at first for about two minutes, adding half a minute each exercise until he gets up to ten minutes. Then keep this up for weeks or months just before retiring. This will build the muscle up. The spheres should be .75 D.

Dr. Joseph Lichtenberg, Kansas City: The character of the light used should be taken into consideration in fitting glasses for near. Stenographers, bookkeepers and others are compelled to work by artificial light, incandescent electric or gas, which seem to possess an irritant quality, possibly due to ultra-spectroscopic rays. Stronger glasses are necessary and a certain tint, as amethyst, as suggested by Dr. Fox, may be used, or the so-called ray-filtering glasses of the Germans.

Dr. Mark D. Stevenson, Akron, Ohio: Last year I emphasized the importance of the anisometropic patient looking through the center of the lenses, and using the neck muscles instead of the external eye muscles. The proper use of artificial illumination in testing for near work is important, since it is commonly used by many patients. In asthenic conditions treatment should take into consideration local and general hygienic conditions, rest, exercise, etc., but in many busy people there is a period before recovery when the eyes must be assisted by lenses.

### **Spinal Anesthesia.**

Dr. Wendell Reber, Philadelphia, reports 5 cases of ocular palsy associated with induction of spinal anesthesia and reviews other similar complications of such anesthesia reported in the literature. These cases reported occurred among 2,000 cases of anesthesia by lumbar injection in the Samaritan Hospital, Philadelphia, making a proportion of 1 in 400 cases. He groups all the reported cases under 3 heads, according as they show involvement of one abducens, both abducens, or the trochlearis and oculomotor in addition to the abducens. Three of the cases reported by Reber were of the first class and two of the second. The cases are tabulated and discussed under various points to be considered. Nearly every local anesthetic has been employed in the cases followed by ocular palsy, and he finds nothing in the facts to support the theory that any special agent used had anything to do with the results. The dose employed has not been sufficiently often stated by the reporters, but, judging from those cases in which it is, it would appear that the European surgeons were rather given to larger doses than the Americans, from 5 to 7 centigrams being usually the limit employed by the latter. It is a noteworthy fact that of the 36 cases reported altogether, 33 patients showed involvement of the external recti alone, 2 exhibited incomplete ophthalmoplegia, and 1 fourth nerve palsy. In the 27 cases in which the time of onset of the palsy was noted the average was 10 days after the spinal

analgesia induction. It would appear that novocain predisposes to earlier onset of the ocular palsy, but other factors assist in this matter. Sixteen positive recoveries are recorded in the 26 patients who were watched, though 1 was 8 months in achieving single vision. A certain small percentage, as yet unknown, will probably show permanent disability. The pathogenesis of these palsies is not clear, and Reber quotes W. W. Babcock with approval, who for the present holds the following conclusions as given in a letter received by the author: "1. We have no positive final proof that pure stovain or tropacocain, when used for spinal analgesia, will be followed by paralysis of the ocular muscles. 2. The use of solutions of both stovain and tropacocain may be followed by such palsies and by other symptoms suggesting the presence of associated products. 3. The palsy may occur irrespective of the use of adrenalin, alcohol, glucose or other admixture, although it is possible that some of these substances may accentuate or favor the undesirable effects. 4. The antiseptic properties of stovain and tropacocain and the fact that in quite a number of instances I have withdrawn cerebrospinal fluid from one to many days after the spinal analgesia, and have never found the slightest turbidity of cellular exudate, or other indication of inflammatory action, inclines me to the belief that sepsis or a bacterial irritation is not responsible for the ocular palsy. 5. An incident of ocular palsy in 1 to 400 or 500 spinal analgesias and the occurrence of frequent headaches should make surgeons very careful to avoid heated or decomposed solutions for spinal analgesias. 6. Spinal analgesia should not be discredited by the untoward effects resulting from decomposition or contaminating by-products. Unfortunately no Squibb has yet arisen to do for spinal analgesics what has been done for ether and chloroform." While Reber considers that these views of Babcock as plausible, he suggests further investigation along two lines. First, the most careful polariscopic studies should be made of both boiled and unboiled solutions of the anesthetic used and this supplemented by animal experimentation as to the comparative toxicity or non-toxicity of the solutions after boiling or heating and before. At the same time it is difficult, he thinks, to avoid the conviction that some form of low-grade toxemia is operative in these cases. If in 2,000 spinal analgesias there are complications of ocular palsies lasting over 3 months in 2 cases, such complications must be taken into account when using this method.

*Discussion.*—Dr. John Green, St. Louis: The increasing use of spinal anesthesia makes it proper that it should be carefully scrutinized and the dangers of the method definitely determined. One of the most serious effects seems to be this ocular muscle palsy. As to its pathogenesis, Oppenheim ascribes it to tiny nuclear hemorrhages and Kalt to ordinary hemorrhages at the time of injection, while Dr. Reber objects to both of these theories because of the late appearance of the palsy. Muller's suggestion of an inflammation of the nuclei and nerve trunks from the traumatism of the outflow of the fluid seems plausible. The withdrawal of even a small quantity brings about a changed relation of the brain to the skull box and we may have a slight shifting of the brain, and it does not adjust itself as easily as do the abdominal organs, for instance. The theory of meningitis of Blandinet and Caron hardly seems tenable. Schmidt-Rimpler's theory of a toxic process would seem to be borne out by Dr. Reber's case in which there was a weakness of the externi. Babcock's experience led him to a somewhat similar conclusion. In Graves' 350 punctures no palsies occurred, though some had unpleasant symptoms. In the case of H. Wolff a trocar introduced into the subarachnoid space for the purpose of injecting stovain was followed by an abducens palsy although no injection was made. In his opinion the formation of an intradural hematoma gave rise to toxic products which in turn produced the paralysis of the nerve. This may offer the true explanation.

Dr. W. W. Graves, St. Louis: In 350 lumbar punctures made within the last two years I have seen no ocular palsies, but have seen some untoward effects, due probably to the fact that the physiologic relation between arterial tension on the one hand and the vascular condition on the other was disturbed. The fact that the palsies clear up in time would almost exclude nuclear lesion. The sudden lowering or sudden increase of pressure by withdrawing or introducing fluid may disturb the balance between the secretion of cerebro-spinal fluid and its absorption. Nervous tissue unlike other tissues will not stand sudden disturbance of its equilibrium, sudden pressures, or sudden pulls or stretching, and having defective vessels minute thromboses might take place and thus in a mechanical way bring about these palsies. The fact that the abducens is affected may be due to its course, exposure to pressure and torsion. These patients have not usually been examined neurologically or ophthalmologically and there may have been a preexisting lesion which may account for the palsy following the puncture.

Prof. Alfred Saenger, Hamburg, Germany: We have seen five cases of this form of paralysis in the Hospital St. Georg, one being in a physician following lumbar anesthesia in an operation for gangrene of the foot due to arteriosclerosis. After the anesthesia he had paresis of the right abducens, paralysis of the median and a neuritis of the right crural nerve. The paralysis of the right abducens lasted about four months, of the median about the same period. I am of the opinion that the drug caused this paresis.

Dr. James Bordley, Baltimore: In his work on brain tumor Dr. Cushing has had several cases of paralysis of the external rectus, and it has occurred to me that the same cause might be operative in the cases under discussion. Normally the nerve at its exit from the brain lies external to the artery, but in every one of Cushing's cases with paralysis the nerve was next to the brain and the artery external. As the edema of the brain from pressure increases it puts the artery on the stretch, causing it to tunnel the brain and press upon the nerve beneath, producing the paralysis of the nerve.

Dr. G. C. Savage, Nashville: If two needles were passed in making these spinal injections, and while fluid was introduced with one, withdrawn through the other, the amount of the pressure within would be neither increased nor diminished.

Dr. W. Reber, Philadelphia: Dr. Savage has suggested what Dr. Babcock has done repeatedly, as has also Morton of San Francisco and others. These palsies usually are limited to two to four weeks, but I saw a case recently that persisted for 11 months with the same degree of bilateral external rectus palsy. I can see possible legal actions in these cases. The average amount of fluid withdrawn and injected is 10 c.c. There is no basis for the belief that the anesthetic has a selective action on any muscle. Dr. Graves' remark is pertinent, for no neurologic or ophthalmologic examination was made in these cases. Arteriosclerosis may be a deciding factor, as mentioned by Dr. Saenger. Dr. Bordley's remark is extremely interesting. Such work as Cushing's is going to lead to the solution of this question.

### **Report of Committee on Ocular Muscles.**

The report of the Committee on Collective Investigation of the Ocular Muscles, consisting of Dr. Lucien Howe, Buffalo, and Dr. Howard F. Hansell, and Dr. T. B. Schneidemann, Philadelphia, is



published. It was decided last year to devote the attention for a year or two to questions still remaining obscure concerning the anatomy and physiology of the ocular muscles. It is easy enough to make the plan of the investigation, but it was a different matter to find proper men ready to engage in what are practically laboratory experiments. The number has been reduced to less than 20, selected, so far as possible, from the more progressive or from the younger men. There are differences also in the apparent qualifications, and the central committee cannot hold itself responsible for results given by individuals. The summary of the observations is given as follows: "The results obtained by this study of the anatomy and physiology of the ocular muscles can be summarized briefly as follows: We have: First, there is corroborative evidence concerning the check ligaments sufficient to warrant a definition of their extent. Second, there is corroborative evidence of the existence and extent of the secondary insertions of the ocular muscles, and all will probably now agree as to their clinical importance. Third, there are a few more exact dissections of the ciliary ganglion. Passing next to physiology we have: Fourth, there is corroborative evidence as to the power of accommodation with parallel visual axes. Fifth, there are new curves of the effects of cocaine, showing the important fact that it has a cycloplegic action. Sixth, there is a curve for the action of homatropin, 1/50 of a grain. Seventh, there are curves indicating that various strengths of eserine produce varying curves showing its effect on the accommodation. Eighth, corroborative evidence exists that orthophoria for the far point exists only in a small majority of cases. Ninth, there is a difference between minimum and maximum duetion, the former being quite constant, the latter not ordinarily constant." The committee recommends that members of the Section on Ophthalmology who care to study the muscles should turn their attention during the next year to pathologic conditions of the ciliary muscle, while the study of the anatomy and physiology of the muscles already begun should be continued. The report is illustrated.

*Discussion.*—Dr. G. C. Savage, Nashville: The statement in the report that "For abduction it has been found by such tests to be about 6 or 8 degrees, and for adduction from 4 to 6 degrees. These results in normal eyes seems to be fairly constant," gives figures very much lower than the records made by any of the observers who have written on the subject even a long time ago,

and very much lower than would be justified by the results of many of us who have tested the duction power of these muscles. I understand the results have been obtained by beginning with a strong prism and coming down to a weaker. My judgment is that the conclusion reached by that method would be misleading. Why not resort to the other plan and begin with weak prisms and go up and compare the results? Of course the means used by these investigators brought these results.

Dr. Lucien Howe, Buffalo: We are glad to have suggestions. We have no theories but seek only the facts.

### **Autointoxication and the Eye.**

Dr. H. Woods, Baltimore, discusses the ocular troubles, especially of the lids and mucosa, that may result from intestinal autointoxication. He mentions that there are three vascular or functional troubles constantly seen in routine practice: those already mentioned of the lid and mucosa and recurrent circumcorneal injection, asthenia of the ciliary muscle, accommodation spasm, etc. To connect these with remote causation we must painstakingly exclude known causes. We know that one would naturally look for relapsing ciliary cramps in cases of exophoria and hyperopia, but cases occur in which, in spite of all efforts, they will not recover with treatment, or if they do apparently recover, they relapse, and he asks why this is so. If we find a clinical association between these troubles and digestive disorders, occurring not only once but often, the suspicion of the causative effect of the remote disease becomes a conviction. He reports a case in which constipation seemed to be such a cause, and we see all grades of ciliary involvement after various infectious diseases, or diseases which create toxins in the system. There is a good reason for thinking of the intestines as a source of this autotoxic influence. Autotoxic diagnosis is a matter of inference, though undoubtedly the most probable in our present state of knowledge. He quotes from the book of Hertz, one of the recent Oxford medical publications, as to the probable mechanism of this condition which is called by that author copremia. While it cannot be definitely proved in a chemical way, it is still the natural explanation. Hertz's views reduced to their simplest terms indicate that autointoxication from constipation and other intestinal disorders is the most satisfactory working hypothesis. Woods refers to cases coming under his own observation in which the ocular symptoms he has mentioned seem to be connected with chronic appendicitis. He thinks there is enough asso-

ciation between the eye disturbances named and manifest symptoms of autointoxication from constipation as to justify the belief of a causative relation. There is reason also to think that the same eye troubles can follow intestinal lesions which do not essentially produce toxic products. Physiologic chemistry is apparently not able to aid us in proving this or demonstrating how and why it occurs, and until it is, we will have to depend on clinical evidence. If we are ever to explain or relieve them we must view the eye as the receiving as well as the sending end of what we call remote disturbances.

*Discussion.*—Dr. J. F. Schoemaker, St. Louis: I believe that intestinal toxemia will be recognized as the underlying cause of an increasing number of the three forms of ocular trouble mentioned by Dr. Woods. I am unable to furnish any chemical proof of this, but I believe there are such substances. I have observed more cases of the second class, suffering with hyperemias and inflammations of the conjunctiva, and relief has been obtained by treating the constipation and indigestion. While I have had cases of the third class with injection of the ciliary body and subnormal accommodation and have suspected them to be due to toxemia, I cannot prove it. One of the most persistent cases of chronic conjunctivitis I have ever had suffered from chronic appendicitis and constipation. Morris reports a case of double central chorioiditis in a man with a chronically inflamed appendix which cleared up with normal vision on removal of the appendix. In one of my cases there was a spastic condition of the sigmoid which prevented complete evacuation of the bowel, causing constipation. Treatment by a competent internist resulted satisfactorily. Purgatives in such cases do little good. As pointed out by Thayer and Turk improper digestion of proteins may produce systematic poisoning and I believe many cases are due to this. This is also proven by Blum in his experiments in feeding dogs after thyroidectomy. I believe it is important to greatly restrict the amount of meat taken in cases in which auto-intoxication from the intestinal canal is suspected.

Dr. Judson Daland, Philadelphia: The relationship between intestinal toxemia and functional or organic ocular disease could only be demonstrated by isolating and administering these toxic substances and the reproduction of the lesions. The character of these toxic substances is not known and therefore we are com-

pelled to fall back on clinical evidence. In the condition known as biliousness the relation to certain ocular disturbances seems to be sufficiently plain. Today intestinal toxemia is viewed from the standpoint of aberrations or variations in metabolism and of putrefactive changes in the contents of the colon. This shows the vast possibilities of the question. The simplest and most common form is that symptom-complex known as biliousness. In fecal retention the bowels move daily, perhaps, but the colon is never empty. The chemical sign of this toxemia that has attracted most attention is indican in the urine. This substance is probably non-toxic, but is an indicator of various products of putrefaction that have been absorbed. These substances are numerous and variable, depending on the amount and kind of food ingested, variations in digestion, etc.

Dr. J. L. Thompson, Indianapolis: Patients with ocular troubles come to me and say their physicians have been treating them with electricity and similar methods. I look into the eye and see no edema, no hemorrhages and no trouble with the optic nerve. I then prescribe a large dose of saline purgative every day or two and they come back in a week or two greatly changed. When in doubt clean out the bowels thoroughly.

Dr. L. Connor, Detroit: The late C. R. Agnew in cases of ocular trouble associated with abdominal infections directed them to walk, to care for the skin and the bowels and to take proper food, and I observed that they recovered. Dr. Woods told me recently that his patients with corneal trouble did better if they lived in the open air. Dr. Woods' paper has done us good service. Many ophthalmologists have recognized these troubles though unable to trace their exact causation. We may expect better results as every doctor gains real ophthalmic practice by his working knowledge of infectious diseases of the eye and its simple refractive defects, and they ought to furnish material for conclusions nearer the facts of the relations of both gross and fine lesions of the eyes to defective abdominal metabolism.

Dr. A. G. Bennett, Buffalo: I get numberless cases of inflammations of the conjunctiva in my experience at the Children's Hospital that improve almost immediately when attention is directed to the intestinal tract. This is the type of case that I was taught to treat with syrup of the iodid of iron and yellow oxid of mercury ointment.

Dr. R. D. Gibson, Youngstown, Ohio: The man who has not done general practice before going into eye work does not appreciate

the effect of intoxications on the eye. Children with phlyctenular conjunctivitis are children with digestive troubles. Calomel given in small doses and frequently repeated is almost a specific for this trouble.

Dr. S. L. Ziegler, Philadelphia: The study of autointoxemia and perverted metabolism will in pathology turn our attention from bacteriology to physiologic chemistry. Chemotaxis is the pathogenic process that originates many of the diseases we are studying, and possibly many of those we have attributed to bacterial invasion. I once wrote a paper on the relation between errors in diet and corneal ulcers. Sweets, tea, coffee and other articles of that character will create disturbance in the intestines, which is transmitted to the nose and through the tear ducts to the eyes. Eales of Birmingham has called attention to intraocular hemorrhage due to constipation, and we should carefully consider the rôle which constipation bears to these ocular disturbances. Some years ago I reported a case of this character in which there were recurrent ciliary hemorrhages, and following these a cataract, which was afterward operated on successfully. In the other eye the hemorrhages became organized and remained there. We should clear out the bowels, and clear out the nose, thereby improving breathing and oxidation, and look after the skin, employing baths, diaphoretics, electric light baths or pilocarpin. The problem is difficult, for these biologic products in large enough quantities for study will be difficult to procure, and second, the skilled physiologic chemist is still a *rara avis*.

Dr. Hiram Woods, Baltimore: A man of 38 had lost one eye some years previously by accident and had been in the hands of a number of people trying to get relief from asthenopia by glasses, one of which was a plus cylinder, 150 degrees, and another a plus cylinder, 80 degrees. All had been given by competent men, because he at the time had this manifest refraction. Under prolonged scopolomin cycloplegia the only error was  $11\frac{1}{2}$  spherical. With that he had cl. v. 20-15, and accommodation from 8 out to 20 for Jaeger 1. He came in when he had the next attack and I put in the other eye a drop of atropin. He had an anterior synechia and I wanted to see if that was the source of the irritation. It did not help. The second time vision had fallen from 20-15 to 20-50; his accommodation range was 11 to 15 inches. He was given calomel and a saline purge and came back in two days with 20-15 cl. v. and accommodation restored. I believe this is an

example of many cases. We should study this question of metabolism.

### **Ophthalmia Nodosa.**

Dr. W. H. Parker, Detroit, describes the affection known under the name caused by the entrance into the tissues of the eyeball of the hairs of certain species of caterpillars. After noticing the literature on the subject he describes the condition. The disease is most common among those who work in the fields and woods, some people being more susceptible than others, and a history of direct contact is not always given. The first irritative symptoms appear soon after the trauma. There is a sensation of a foreign body in the eye followed by lacerimation, itching, swelling of the lids, pericorneal injection, and edema. As soon as the hairs penetrate the tissues, which occurs on the fourth to eighth day, the first tubercle like modules appear and the typical disease develops. Formic acid has been proved to be present in the glandular secretion of the hair and the disease cannot be considered to be a bacterial one primarily, but rather due to chemical action. The symptoms tend to subside after a short time, but subsequent exacerbations are liable to occur. If the hairs are removed during the first irritative period and before they work their way into the tissues, which is favored by rubbing, etc., the disease may be aborted. Parker reports a case which had lasted for a number of months and which he cured by curetting, which revealed the imbedded hair. He gives a table of the reported cases of the disease. Several species of caterpillar are implicated, *Bombix rubi* being the chief offender.

To be continued.

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### **OCULAR DISEASE IN HEREDITARY SYPHILIS.**

Dr. S. D. Risley, Philadelphia: More than 60 per cent of all cases of iritis applying for treatment are due to syphilis, and at least 35 per cent of all blindness is the result of gonococcal infection during parturition. The vast majority of cases of interstitial or parenchymatous keratitis are unquestionably due to hereditary syphilis. Thus syphilis stands today, as it has stood for generation after generation, the darkest blot on the fair escutcheon of our Christian civilization. Attention should also be called to the very large group of patients suffering from chronic forms of eye disease which are difficult to classify, but which are doubtless due to impaired general nutrition, the result of mild or less virulent doses of the infection.—*Jour. A. M. A., July 16, 1910.*

## News Items

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*Personals and items of interest should be sent to Dr. Frank Brawley, 72 Madison street Chicago.*

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Prof. Dimmer of Graz will succeed Prof. Schnabel, whose death left vacant the chair of ophthalmology in the University of Vienna.

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The De Zeng-Standard Company has removed from Philadelphia to its new and very complete factory which has just been erected in Camden, N. J.

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Drs. Homer Dupuy, Chas. Landfried, Allan A. Kennedy, Lieven D. De Poorter, John Leake and A. Benjamin Gaudet have resigned from the staff of the New Orleans Eye, Ear, Nose and Throat hospital.

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The movement for the prevention of blindness has reached Missouri, where they have organized the State Sight-Saving Society. Dr. John Green, Jr., of St. Louis is chairman and Drs. Clarence Loeb, Albert Hamell and Frederick Taussig of St. Louis are directors.

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The ninth and tenth volumes of the Transactions of the American Academy of Ophthalmology and Oto-Laryngology are needed to complete the files. Anyone wishing to contribute these volumes, or who will sell them, is requested to address Robert Fletcher, assistant librarian, office of the surgeon-general, Washington, D. C.

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The New York State Department of Health have issued complete instructions for the care of the eyes of new-born babies. These instructions are couched in simple, direct language and are printed

in English, German, Italian, Polish and Hebrew. They also have forms for the signatures of physicians and midwives who are asked to pledge themselves to adopt prophylactic measures in all obstetric cases.

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Resolutions Regarding Dr. Calhoun.—A committee of the board of trustees and the faculty of the Atlanta College of Physicians and Surgeons, at a joint meeting held August 29, adopted resolutions recounting the distinguished services of the late Dr. Abner Well-born Calhoun, deploring the loss of his wise counsel, and deprivation by his death of his contributions for the public welfare, and setting apart a page in the records of the institution to be inscribed to his memory. Dr. Calhoun was for many years a valued collaborator on *THE OPHTHALMIC RECORD* and the editors and collaborators of the *RECORD* join in deploring his loss.

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At the last meeting of the International Ophthalmologic Congress in Naples, eight gold and three silver medals were offered for the best articles in honor of Prof. de Vincentiis. The following received gold medals: Birch-Hirschfeld, T. Henderson, A. del Monte, A. de Lieto Vallaro, L. Guglianetti, G. Samperi, H. Villard and R. Seefelder. W. Clausen, R. Pardo and K. Wessely received the silver medals. Dr. E. Blaauw of Buffalo was a member of the committee in charge of the awards.

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For centuries trachoma has been a scourge of Egypt and has caused an enormous amount of blindness—hence its name, Egyptian ophthalmia. Among the many beneficial results of the British occupation is an attempt to repress this dire malady, which is almost universal in the lower and middle classes. According to the census of 1901 more than half a million Egyptians are blind in one or both eyes, and it is thought that this number is under the mark owing to a reluctance to declare personal or family infirmities. Those blind in one eye form 3.2 per cent of the population and those blind in both eyes 1.2. In 1903 Sir Ernest Cassel, a well-known philanthropist, presented \$200,000 for the relief of ophthalmia in



Egypt. Two movable ophthalmic hospitals were formed and placed under the control of Mr. A. F. MacCallan, an ophthalmic surgeon. They consisted of a dozen large Indian tents with the necessary equipment and a complete set of ophthalmic instruments. Attached to them are two Egyptian surgeons with the necessary attendants and servants. Accommodation is provided for twelve in-patients, but the greater part of the work consists in the treatment of out-patients of whom about 300 attend daily. A camping ground is selected in or near a town and occupied for about six months. Then the hospital is transferred to another place. So vast is the amount of work to be done that the site is changed, not because there is any diminution in the number of patients, but because it is thought fairer to give the different provinces a turn. The movement started by Sir Ernest Cassel is extending. Seven years ago little was done for ophthalmic patients; there were no ophthalmic surgeons of repute outside Cairo and Alexandria. Now the traveling hospitals have aroused interest in the country and the Egyptian public has subscribed \$50,000 for building purposes, to which the government has added \$15,000, and \$25,000 a year for maintenance. Three permanent ophthalmic hospitals are now in course of construction.—*Journal of A. M. A.*

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#### NEW BOOKS.

Die Kopulation der Netzhaut mit der Aderhaut, durch Kontakverbindung zwischen Sinnesepithel und Pigmentepithel. (The Close Relation of the Retina to the Choroid through adhesion between the Sensory and Pigment Epithelium., By Dr. R. Halben Privatdozent in Greifswald, etc. Published by S. Karger, Karlstrasse 15, Berlin, Ger., 1910.

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## CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.G.) J. F. Burkholder (E. E. N. T.) Oliver Tydings (E. E. N. T.) C. H. Francis (Poli.)	G. W. Mahoney (Poli.) Geo. F. Suker (P.G.) Oliver Tydings (E. E. N. T.) C. H. Francis (Poli.)	E. J. Brown (E. E. N. T.)	G. W. Mahoney (Poli.) Richard S. Pattillo (P.G.) J. F. Burkholder (E. E. N. T.)	Richard S. Pattillo (P.G.) Oliver Tydings (E. E. N. T.)	G. W. Mahoney (Poli.) E. J. Brown (E. E. N. T.) C. H. Francis (Poli.)
10 A.M.	L. J. Hughes (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	E. J. Brown (E. E. N. T.)	L. J. Hughes (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)
	Brown Pussey, N.W.U. Every day, 10-12 A.M.					
11 A.M.	H. W. Woodruff (E. E. N. T.)	A. G. Wippert (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	A. G. Wippert (E. E. N. T.)	H. W. Woodruff (E. E. N. T.)	A. G. Wippert (E. E. N. T.)
1 P.M.	.....	Willis O. Nance (C.C.S.)	.....	Willis O. Nance (C.C.S.)	.....	Willis O. Nance (C.C.S.)
2 P.M.	E. V. L. Brown (Inf.) E. J. Gardner (E. E. N. T.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) E. K. Findlay (Inf.) D. C. Orcutt (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) N. E. Remmen (Inf.) F. A. Phillips (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) *N. A. Young (Inf.) *H. B. Williams (Inf.) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) Thos. Faith (E. E. N. T.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) N. E. Remmen (Inf.) F. A. Phillips (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) *N. A. Young (Inf.) *H. B. Williams (Inf.) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)	E. V. L. Brown (Inf.) W. A. Fisher (E. E. N. T.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) *N. A. Young (Inf.) *H. B. Williams (Inf.) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) Thos. Faith (E. E. N. T.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) N. A. Young (Inf.) *H. W. Woodruff (Inf.) *N. A. Young (Inf.) *H. B. Williams (Inf.) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)	E. V. L. Brown (Inf.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) Wm. H. Wilder (Rush) H. W. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) *Oscar Dodd (Inf.) M. H. Worthington (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Fisher (E. E. N. T.) W. A. Fisher (E. E. N. T.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) D. A. Payne (Illa. Med.) F. A. Phillips (Inf.) *Wm. H. Wilder (Inf.) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)
3 P.M.	W. Allen Barr (C.C.S.) *Wm. E. Gamble (P. & S.)	H. H. Brown (Illa. Med.)	*J. E. Harper (P. & S.) *W. Allen Barr (C.C.S.) *Wm. E. Gamble (P. & S.)		W. Allen Barr (C.C.S.)	Geo. F. Suker (P.G.)
4 P.M.	W. F. Coleman (P.G.)	C. W. Hawley (P.G.)	G. F. Suker (P.G.)	C. W. Hawley (P.G.)	W. F. Coleman (P.G.) Brown Pussey (County)	

\*Special operative eye clinics.

## ABBREVIATIONS:

C. C. S.: Chicago Clinical School,	County: Cook County Hospital, W.	Poli.: Chicago Policlinic and Hospital, 174 E. Chicago Avenue.	Rush: Rush Medical College, W.
819 W. Harrison Street.	Harris and Honore Streets.	St. Luke's: St. Luke's Hospital, 1416 St. Luke's.	Harrison and Wood Streets.
E. E. N. T.: Chicago Eye, Ear, Nose and Throat Clinic, Washington and Franklin Streets. Clinics all day.	Ill. Med.: Illinois Medical College, 182 Washington Blvd.	P.G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.	Indiana Avenue.
	Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.	N. W. U.: Northwestern University, 2431 Dearborn Street.	

# THE OPHTHALMIC RECORD

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## THE ETIOLOGY, PREVENTION, TREATMENT AND CURE OF TRACHOMA.

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This is perhaps the place to consider the theorems (OPHTHALMIC RECORD, September, 1908) but not *seriatim*, for in this paper I propose to submit some proofs of Theorem II (*loc. cit.*), which reads:

Proposition 1. The *primary host* of the exogenous parasite is the horse, and probably other animals, and birds.

Proposition p. The *intermediary hosts* are certain biting flies, gnats, and possibly other insects.

Proposition 3. The final host is the human body.

That certain "gad"—or horse-flies are, and always have been the principal and vital factors in the origin and dissemination of trachoma, I am firmly convinced, and here present geographical, geological, as well as clinical and biological facts and observations as proofs of this conviction.

That trachoma is a most ancient disease is abundantly attested by the sacred records of the Hebrew and Egyptian peoples. To be more precise, on referring to the Old Testament, we find *Arôb* or *Oreb* (Gr. *Κυρροβα*) only occurs in reference to the plague of flies in Egypt. (Exodus viii, 21; Psalm xxviii, 15). "It is disputed whether the common house-fly or mosquito is meant; both are great pests in Egypt now, as also the gad-fly and horse-fly. *The common fly carries the poison of ophthalmia from man to man, and spreads the infection.* (Italics mine, E.) It is probably here generic, including the "plague of swarms" of flies, sand flies, gnats, mosquitoes, etc.<sup>1</sup> By some authors, Kirby (Bridgewater Treatise ii, 357), Michaelis, Rosenmüller, Geddes, etc., the *Oreb* has been supposed to be a cockroach, *Blatta* sp. (See Hope, in *Trans. Entomol. Soc.*, ii, 173.)<sup>2</sup>

The Hebrew word for the gad-fly or horse-fly, is *Zebub*, called in Ecclesiastes x. 1., the fly that corrupts the apothecaries' ointment, and as far as I am at this writing able to ascertain, is entomologically *Scarabaeus coprophagus*; but the word *Zebub* is properly used to indicate *Hippobosca* ( *ιπποβοσκα* ) or *Æstrus*. According to Westwood,<sup>3</sup> "it is only twice mentioned in the Bible," and appears to be the word, properly used, to indicate the gad-fly or horse-fly and (Isaiah vii, 18) "frequenting the rivers of Egypt, tormenting the horses on the banks of the Nile and Jordan, so pestiferous as to be deprecated by appeals to a special god, Baal-zebub, the Fly-god (of Ekron), whom the Jews derisively called Baal-zebel, the 'lord of the dung-hill.'"

The poisonous tsetse fly may be another fly formerly dedicated to Baal-zebub.\* This gad-fly is probably but one of several species of horse-fly, and the breeding places are different for different species.

There are well-known facts bearing out my assertion that the maggots, worms, and eggs of the horse-fly causing trachoma, are deposited and hatched in the sand, and mostly along the banks of rivers and their smaller tributaries.

One of the most convincing is the fact that the early settlers of the state of Illinois called their new home "Little Egypt," a name still popular because the sandy soil and low bottoms bordering its many rivers, and, in accordance named two of their towns Cairo and Thebes. The significance of this Oriental name becomes more apparent to one who has read a valuable contribution by Dr. W. H. Wilder of Chicago, "On the Prevalence of Trachoma in the State of Illinois," read before the Illinois State Medical Society, May, 1901.<sup>4</sup>

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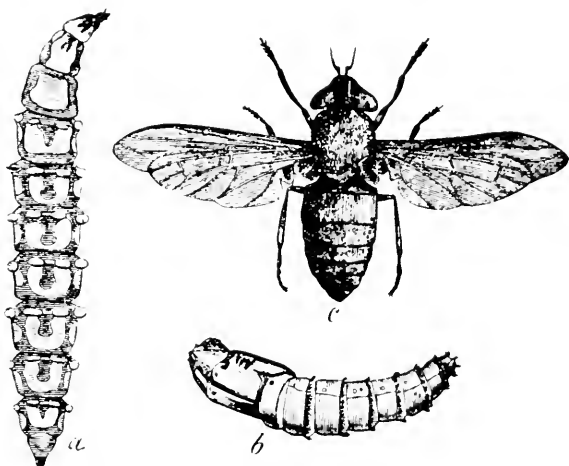
\*As an integral and essential link in the chain of my argument that sundry species of the horse-fly and "stable-fly" are the primary hosts and infective agents, and other non-biting flies the disseminators of the trachoma micro-organisms, I here give the portions of sacred Hebrew scripture above referred to by Houghton, Wildwood and others:

Exodus viii. 21. "Else if thou wilt not let my people go, behold I will send swarms of flies upon thy servants, and upon thy people, and into thy houses; and the houses of the Egyptians shall be full of swarms of flies, and also the ground *whereon they are.*" (Italics mine, E.) "And the Lord did so; and there came a grievous swarm of flies into the house of Pharaoh, and into his servants' houses, and into the land of Egypt, and the land was corrupted by reason of the swarms of flies." In verse 21 the sentence, "the ground whereon they (the houses) are," indicates that the flies and gnats infested, and presumably bred in the ground, *i. e.*, the sandy soil along the rivers; and in cattle inclosures.

Isaiah vii. 18. "And it shall come to pass in that day that the Lord shall hiss for the fly that is in the uttermost part of the rivers of Egypt," etc. This fly is the *zebub*, the gad-fly and horse-fly according to Houghton and Wildwood.

As an introduction, Wilder quotes Fuchs's brief history of the disease, which I give below in a footnote.†

The careful statistics of A. L. Adams<sup>6</sup> of the inmates of the Illinois Institute for the Blind, are quoted in comparison with the statistics of other American institutions and hospitals, to lead up to the subject of his paper. Adams showed that 451 pupils, 11, or 9.09 per cent, were blind from trachoma. It is second on the list of idiopathic diseases causing blindness, being preceded only

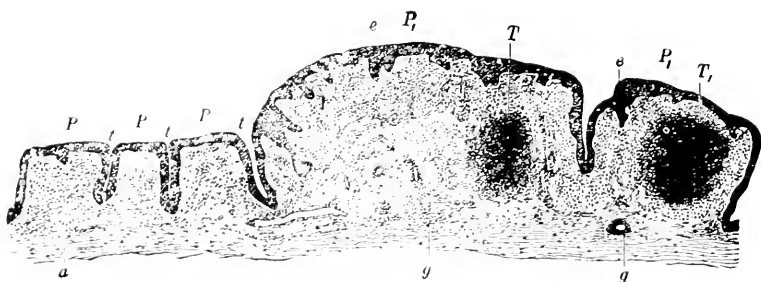


by blenorrhoea neonatorum, which caused 78, or 17.25 per cent, of the total number. "The large number of blind from trachoma in the Illinois Institute, 9.09 per cent., as compared with the number in the New York Institute, and with the statistics of

†"It was at the commencement of the last century that trachoma began to attract the attention of physicians to any great extent. \* \* \* People were of the opinion that it had been introduced into Europe from Egypt (hence the term "Egyptian ophthalmia") by Napoleon I. For when the latter, in July, 1798, landed in Egypt with an army of 32,000 men, most of the soldiers were soon attacked by a violent ophthalmia, and these were supposed to have brought with them on their return to Europe, the disease, which was formerly confined to Egypt. Subsequent historical researches, however, have shown that the disease had already been endemic in Europe since antiquity. It is mentioned in the Ebers papyrus and in a pseudo-Hippocratic manuscript. \* \* \* From time immemorial trachoma has existed in Europe as an endemic disease. But when by reason of the Napoleonic wars, the armies came so repeatedly in contact with each other and the civil population, the disease became more fully prevalent. In the English army during the year 1818, there were more than 5,000 on the invalid list, who had been rendered blind as a consequence of trachoma. \* \* \* When they had so many trachomatous soldiers in the Belgian army that they did not know what to do, the Government applied to Junken, who was at that time a celebrated ophthalmologist in Berlin. He recommended them to dismiss the trachomatous soldiers to their homes. By means of this fatal measure, trachoma soon became diffused to an extent that has not been in any other European state." Fuchs states moreover that in the Prussian army from 1813 to 1817, 20,000 to 30,000 men were attacked with it; in the Russian army from 1816 to 1839, 76,811 men were subjects of the disease. In Belgium, in 1840, one out of every five soldiers was affected with trachoma.

Oppenheimer in New York, 4.02 per cent.," caused Wilder to suspect an unusual prevalence of the disease in Illinois, and this was strengthened when he compared the number of cases of trachoma treated in the Illinois Charitable Eye and Ear Infirmary, with the number treated in ten large ophthalmic hospitals of the United States. The average percentage in the latter for the year 1900, was 3.24 per cent., and in the Chicago Institution 5.6 per cent., nearly double.

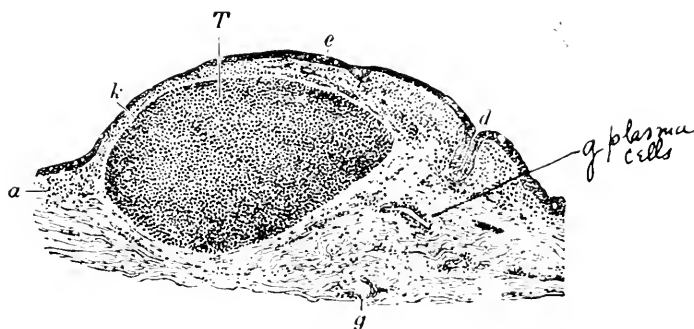
Wilder then points out that, "The large New York institutions must draw much of their material from the host of poor foreigners that live in the tenement districts of that city, and it is quite probable that their quota of trachomatous cases is augmented greatly from such sources; but in the Illinois Eye and Ear Infirmary, as will be shown, *most of the cases come from the rural popu-*



*lation, and are of American birth, although it is true many of them are of foreign extraction.*" (Italics mine. E.) To account for this excess above the average in the Chicago infirmary, which, though Hirschberg calls trachoma "Die Weltkrankheit," is by no means everywhere endemic, Wilder states: "For years it has been observed at the infirmary that a great many of these cases come from the southern part of the State (Illinois), and I have made tables showing the total number of cases from each county for a period of ten years, from 1891 to 1900, inclusive, and from this have estimated the percentage of trachoma to population on the basis of the census of 1900. By this means it is possible to make a comparison of the different counties and different parts of the State. The results are shown on the map [the map is here reproduced, E.], and the accompanying charts, on which the lines drawn to a scale represent the relative percentage in the different counties. Judging from the number of cases coming to the in-

firmly for treatment, it is clearly shown that the disease is much more prevalent in the lower part of the State between the Kaskaskia and Wabash rivers, and that it is not as prevalent around the centers of population. (Italics mine. E.) The chart also shows for comparison, the total number of cases received from the different counties during the decade 1880 to 1890, and the estimated percentage of trachoma to population on the basis of the census report of 1890." To these remarks Wilder adds a statement far from optimistic as to the future:

\* \* \* "In view of the fact that the infirmary has been in operation since 1858, and has been a State institution since 1874, I am inclined to believe that the figures indicate an actual increase. It is certain that the disease is not on the decrease if we judge from the statistics available for the last ten years.



\* \* \* "What is the reason for the prevalence of this disease in certain parts of our State; and can anything be done to check it?"

I dare to reply to this shrewd observer that his paper and what now follows here, furnish further links in my chain of evidence that certain diptera, horse-flies, and possibly gnats are the intermediary hosts, and other non-biting flies and gnats the disseminators of the trachoma parasites. Let us examine briefly the geologic, and more *in extenso*, the physical characteristics of "Little Egypt." First, I submit the accompanying map from the United States Geological Survey Monographs: 55th Congress, vol. 387. I have incorporated certain bar markings from Wilder's map, but the main purpose is to show the soil contours of the State of Illinois, illustrating the connection between the many low river and stream bottoms and the amount of trachoma in the various counties of





Little Egypt, which appear to have a direct relation to the drainage basins of the Wabash, Embarras and Little Wabash rivers; that is, in the Eastern portion of Little Egypt.

The sandy nature of the soil along some of the small streams and the Wabash River as described to me, led me to suppose at first that mosquitoes might be one, if not the main hosts, until I learned that the pure-blooded trachoma-immune negro suffers much from attacks by mosquitoes. The map clearly shows that for both decades the disease prevails *par excellence* in Clark, Jasper, Cumberland, Crawford, Lawrence, Wabash and White counties, all bordering the west bank of the Wabash river from north to south; while Union, Johnson, Pope and Hardin counties, situated in the narrow southern extremity of the State, come next. In all the region just mentioned, there is a multitude of streams.\*

It is therefore logical to infer that it is "the fly that is in the uttermost parts of the rivers" of Little, as well as Ancient Egypt, that is the carrier—the loathsome and fierce host of the dread sight-destroyer, trachoma, and this fly of the genus *Tabanidae*, order *Diptera*, in all its species is, as in the days of Isaiah and Ahaz, the world-wide tormentor of man and beast.

I will first give a description briefly of the development and habits of the tabanidæ, and later give the notes of some of my cases, serving to clinically demonstrate the connection between trachoma, the horse, and the horse-fly. Before doing so, I commend to my colleagues the following statement of my friend, the late Dr. Swan M. Burnett of Washington, D. C.: "It (trachoma) is not most rife or pernicious in the overcrowded habitations of cities, but occurs with equal virulency in sparsely populated country districts and mountain regions."<sup>8</sup>

*The Tabanidae (Horse-flies). Intermediary hosts.*

*The Muscidae (House and Stable Flies.) Disseminators: possibly, also, intermediary hosts.*

In describing the development and habits of flies, it is proper to here state that the functions of host and disseminator may exist in the same insect, though generally one or the other predominates. There is one insect hitherto unmentioned by me that must be reckoned with, and that is the common so-called "stable fly" (*Stomoxys calcitrans* Linn)<sup>9</sup>, a well-known species widely

\*The sand and gravel plains are most conspicuously seen on the geological map in Lawrence county (No. 75), and along the Embarras river in Jasper county (No. 73).

distributed and a familiar pest in many countries. It was described by Linnaeus in 1761 (*Sys. Nat.*, 2, 1004), and has been mentioned in numerous works since then. Its bite is severe and it causes a great amount of annoyance to cattle, horses and other domestic animals, and it is frequently troublesome to people working in places where it abounds. It is not confined to stables or the quarters of domestic animals, but is seen in shady places, groves and in dwellings, especially in cloudy weather. \* \* \* It is especially charged against this species that it has been the means of transmitting glanders from diseased to healthy horses, and anthrax among cattle, a charge which appears very reasonable from the fact that it inflicts a deep bite and does not gorge itself at a single animal, but may fly from one to another in securing a meal. It does not appear that the life history of this species has been fully recorded, although it has been stated that the stages are probably passed in dung. In connection with the best studies of the horn-fly by the Division of Entomology (U. S. Dept. of Agriculture), this species was reared with others from horse manure, and it may be considered as established that the eggs are laid in dung, and the larval stage passed there.<sup>9</sup>

In presenting the life and habits of the family, Tabanidae or horse-flies, I can do no better than quote from a "letter of transmittal," addressed to the Secretary of Agriculture by the chief of the Bureau of Entomology, L. O. Howard, July, 1906:<sup>10</sup>

"I have the honor to transmit manuscript of a paper \* \* \* 'Habits and Life Histories of Some Flies of the Family Tabanidae' (horse-flies), prepared by Professor James S. Hine, of the Ohio State University, Columbus, Ohio. As is well known, the insects of this family are injurious and annoying to human beings; \* \* \* there is reason to believe that they sometimes act as agents in the transmission of infectious diseases."<sup>11</sup>

Another observer, Professor Herbert Osborn, of Ames, Iowa, writing of the Tabanidae, quotes Dr. Williston as stating: "On the uninhabited plains east of the Rocky Mountains, the writer has frequently seen them coming from a long distance, attracted by the sight of the horse he rode." They are widely distributed, and species occur in all parts of the world, torturing alike the elephant and lion of the tropics and the peaceful reindeer of the arctic regions.<sup>12</sup>

The species which my studies of the infected regions of this country lead me to believe is the principal host of the trachoma

protozoön, is known as *Tabanus atratus* Fab. "Probably this is the largest species in the family and it is certainly one of the most conspicuous, being quite common and of such a decidedly black color as to attract attention either on the wing, says Osborne, or when perched on the back of some poor animal that tries in vain to drive it off." Fabricius described it in 1791. Fig. 1 is from a photograph from life taken by Professor Hine, and Fig. 2 shows the larva and pupa. Professor Osborn states that the larva is semi-aquatic, being at home either in moist earth or water. The adult fly is an inch or more in length, black throughout, the back of the abdomen covered with bluish white bloom and the wings smoky black.

The life and breeding habits of the Tabanidae are fairly typified by those of the "black and white horse-fly" (*Tabanus stygius*), as described by Hine.<sup>11</sup> The species oviposits principally on the leaves of *Sagittaria* standing in shallow water, habitually placing the eggs just above the point where the petiole meets the expanded part of the leaf. \* \* \* Hatching, as observed, occurred in seven days after oviposition: \* \* \* at hatching time nearly all the larvæ that come from a single mass of eggs appear at the same time and when they have freed themselves from the shells, go tumbling down into the water, scattering more or less and sinking to the bottom, where it is difficult to observe their further action.<sup>11</sup>

This brief incursion into entomology I have given to demonstrate the genesis of the horse-flies in and about the rivers and smaller streams, and that the nearly equally fierce stable-fly is born in the farm yard and stables. Still more it gives point and interest to the map (Fig. 3 here appended and prepared by the U. S. Geological Survey). It is a geological map, and I have selected it as showing distinctly the low, sandy river bottoms of southern Illinois (Little Egypt). According to the United States officials, the light areas of the map, bordering the Wabash and Embarras rivers, represent the sand and gravel plains; and it is hardly to be wondered that it is in Jaspas and Cumberland counties, in which are these sand plains in a farming country, afford the highest percentage of trachoma in Illinois. The northern part of Illinois, on the contrary, is overlaid with drift, and the elevation is comparatively considerable.

I do not hesitate to state, therefore, that it is my settled con-

viction that the low elevation, many streams, and sand and soil favorable to the existence of the larvæ of the Tabanidæ, account for the affliction of the people of "Little Egypt," just as these features do for the terrible affliction of the ancient and modern inhabitants of Egypt. It remains now for me to give my views of the pathology of trachoma and what evidence I have, clinically and through the laboratory, of the nature and life-cycle of the parasites which are the immediate etiologic factors in the infection of both insects and man.

*Cases Illustrating These Papers.* In my paper of September, 1908, in which appeared my theorems, I wrote: "All these ten theorems, as above stated, I hope to prove. Some of them I have the proof of in my records of cases going back to 1882." I here present some of them, but desire especially to report two recent cases. The first affords presumptive evidence that the bites of flies attacking horses cause trachoma and a cachexia: the other that with vigorous health and a normal condition of the blood, local treatment of the trachoma will alone suffice to cure.

*Case I.* X., a logger; æt. 50. Airlie, Oregon. This man I passed on the street of Independence, Oregon, May 20, 1910, and as I passed him, a glance showed me, from long experience, two things: That the man was ill, and that he had some chronic eye disease. In obedience to an impulse, I turned back and questioned him. The following, if not a strictly verbatim report of our conversation is essentially so.

"You've got something the matter with your eyes." "Yes." "How long have you had it?" "About fifteen years." "How long have you been sick?" (He was anemic, sallow, and depressed in appearance.) "Oh, about same length of time." (I examined the lids and saw he had had trachoma, which had about run its course locally, the conjunctiva being fairly smooth, and cornea little affected.)

"Have you been much around horses?" "Yes." "Where?" "Up east of the mountains." (He meant in Eastern Oregon, a hot, dry, sandy country.) "Were there any horse-flies there?" "Yes, lots." (I noticed his cartridge belt.) "Have you been a cow-boy?" "Yes." "Did those horse-flies bite you at all?" "Yes." "Where?" "On the face and hands."

Now, of course, I do not give this case expecting its acceptance as more than contributing evidence of a connection between

the fly bites, the trachoma and the cachexia. To me, however, taken in connection with hundreds of other cases of my own, it is significant of such relationship and connection. It is conceivable that the discharge of equine conjunctivitis (which is common in hot, sandy countries) may be carried by insects from the horse to man; I simply have found no evidence of this, while I have of the effect of biting flies. Moreover, I must be frank and admit that it is more in accordance with clinical experience and the bacteriology of systemic infection to conclude that the infection of the blood in trachoma is the result of the absorption by the lymphatics of the conjunctiva of a toxin of local conjunctival origin, than to suppose it to be the result of the infection of the blood by the bite of an insect at a point distant from the eye.

The existence of a cachexia in the height of a trachomatous attack is, however, a well established clinical fact.

*Case II.* Mrs. E. Z., aet. 42. General health excellent. Has had "granulated lids" for five years. Lived near Roseburg, Ore., in the country, when it began. The left upper lid was operated upon (roller forceps) four months ago.

*Objective Examination.* Severe sub-acute trachoma of all the lids, with intense photophobia. Marked superficial keratitis O. S.

In five weeks the left eye was cured. A few granulations O. D., but these gone a month later. Treatment almost entirely by Dr. A. E. Prince's solution (copper sulph. 10% in glycerine). Solution used, one drop to twenty of water three times daily. Hyperopia carefully corrected (2 D.)

This was a typical case of trachoma of irritative type, and local treatment by an antiseptic (for this cupric sulphate undoubtedly is, in spite of Weeks and others) cured the case, and it has remained cured. The patient was robust and healthy in every way.

*Case III.* A. R. W., aet. about 52. Came Jan. 7, 1901, with an attack, apparently, of acute trachoma of the left eye. Right eye normal.

*History.* Has never had any inflammation of right eye. Has had trachoma of left eye for twenty years, with numbers of acute attacks at rather long intervals. This attack began two days ago.

*Objective Examination.* Right eye normal. I had examined the left eye when uninfamed some months before. It then had the appearance of old trachoma which had run its course. It now had the appearance of a typical acute attack of trachoma. There

was pannus of the upper third of the cornea, with white points of infiltration, which at the left of the pupil area coalesced to form a shallow abrasion. After ten days of unsatisfactory treatment, Dr. H. A. L. Ryfkogel made a culture of the debris of one or two of these white infiltrations of the abrasion and found only a pure culture of the diplo-bacillus of Morax and Axenfeld. Zinc chlorid was then chiefly used and the cure followed quickly. I desire to state that this case had every clinical feature of trachoma. Such cases cannot be uncommon, and, as will be seen, have a bearing on the development of trachomatous infection, and also on its pathology.

*Pathology of Trachoma.* The study of the pathology of conjunctivitis cannot safely be separated from that of its bacteriology. This is especially true of trachoma. Recent researches and reports point to the constant presence of the micrococcus albus as an invariable inhabitant of the conjunctiva, while streptococcus pyogenes, xerosis bacillus, bacillus pyocyaneus and bacillus subtilis are very often present.<sup>12</sup> But in all countries, and especially in Egypt, there are three pathognomonic microorganisms which render conjunctivitis, though often latent in winter, practically endemic. These, by their presence, render the conjunctiva constantly receptive of the protoplasmic bodies which cause trachoma. They are the gonococcus, Koch-Weeks bacillus, and the diplobacillus of Morax and Axenfeld. Fuchs states the case clearly and graphically.\*

At the present time, the so-called "trachoma bodies" of Greef and Prowazek occupy the centre of the microscopic stage. What they are, their ultimate source, and just what relation they bear to trachoma, is still *sub judice*.

Very recently it has been announced by a reputable and trust-

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\*"Now that the form (of trachoma) prevalent in the early part of the 19th century has ceased, its old acute form has become rare. At present it exists in many countries as an endemic disease, but mostly occurs under that chronic form in which, with scarcely any exception, we now see it. . . . In Egypt even at the present time, it is scarcely possible to find a native who has a normal conjunctiva, and innumerable people are blind. . . . Investigations have shown (Morax, Muller) that in Egypt almost every native suffers from it, with which, as a rule, he has been infected in childhood."

"But in addition, many of the natives are attacked during the hot season by an acute inflammation of the eyes, in the secretion of which is found either the gonococcus, or one of the germs causing acute catarrhal conjunctivitis; and most often the Koch-Weeks bacillus. It is cases of the former kind that by causing suppuration of the cornea, produce the blindness that is so prevalent in Egypt."

"Now, all these different inflammations were lumped together under the name of Egyptian ophthalmia and were regarded as identical with trachoma. But in reality, trachoma in Egypt runs just as chronic a course as with us, and the acute cases are explainable as being due to superadded infection. A knowledge of this fact leads us to suppose that in Europe, too, those cases which both during the great trachoma epidemics and also at the present time, either begin acutely or in their subsequent course are associated with symptoms of acute inflammation, are not pure cases of trachoma, but are *mixed infections*." 13.

worthy bacteriologist, that he has found these same "bodies" in the normal conjunctiva of infants.<sup>14</sup>

My own researches lead me to believe that they are not the primary etiologic factors of the disease, but they may play a rôle in the dissemination of the disease similar to that of the diplobacillus of Morax and Axenfeld in the above Case III, and as described here by Fuchs.

The researches of the Goldzichers<sup>15</sup> and others, from the side of the pathological anatomy of trachoma throw, to my mind, a light upon the probable etiology and pathology of the disease, which casts into shadow all the laborious findings of many years of laborious effort to solve this vexatious and baffling problem. Their findings become plausible and almost convincing when considered and compared with well-known and accepted pathological sections of the trachomatous conjunctiva (Figs. 1 and 2).

The material for their investigations was obtained by excising a section of the *tarsus* 3 to 4 mm. broad and the authors state that this did no injury, but rather benefited by depletion.

They believe that the cause of trachoma acts first upon the vessels, and, after its virulence is somewhat exhausted in granule formation, fibro-blasts proceed from the vessel wall, and replacement of the trachoma nodule by scar tissue begins. The term "adenoid" for the so-called follicular formation is, according to these observers, incorrect, the vessel being the essential element. They therefore suggested the term "vascular layer" for the vessels arising from and including the arterial loops which, during repair, *become erected into papilla*. The epithelial changes are purely secondary, while in the sub-epithelial layers are found accumulations of lymphoid cells, *especially large non-nuclear leucocytes*.

In the cellular constituents of the granules, the *plasma cell* plays (formerly overlooked) an important part. These are arranged in layers about the blood vessels. (See Fig. 1 *g, g*; and Fig. 2, *b, b*.) But they state that the plasma cells cannot inaugurate connective tissue development (but offer no reason for this statement), this being dependent, as above stated, on the fibro-blasts derived from the walls of the blood vessels.

I connect with my researches and observations of the biting flies, the Goldzichers' claim that "*trachoma is a disease due to an unknown irritant localized in the vascular layer of the conjunctiva; the initial lesion being in the vessel wall, and that the adrential*

*cells of the vessels produce a profuse lymphocytosis which form the inflammatory granulomata.*" [Trachoma nodules clinically. E.]

But how can a biting insect transfer the protoplasmic bodies to the fine blood vessels and capillaries of the conjunctiva? The bite is in the integument, or (as in the case of my patient, the officer's wife) at the junction of the integument and conjunctiva.

I reply that according to Hyrtl and Langer (quoted by Goldzieher) "the blood supply of the lid is divided into two systems, an anterior for the supply of the skin, orbicularis and Meibomian glands, and a posterior specially for the conjunctiva, *both communicating by delicate branches which perforate the tarsus.*" It is clear that a bite on the external surface of the lid is placed within one or two millimeters of the conjunctiva.

Again, the plasma cell is a variety of so-called connective tissue corpuscles, and the areolar spaces between the bundles of connective tissue fibres are not only filled with lymph, but from them arise the lymphatics.<sup>16</sup> The plasma cells, according to Stirling, are derived from the fixed connective-tissue corpuscles, but are very much smaller.

But, granted that the protozoön enters the vessels of the lid, and that it or its toxins cause the "initial lesion in the vessel wall," have the Goldziehers and myself any authority for believing that the "adventitial" or ameboid leucocytes produce the profuse lymphocytosis and *carry* the protozoön and its toxins to the tears and the conjunctival secretions, thus acting as the contagious element of infection from eye to eye? Undoubtedly. Landerer,<sup>17</sup> referring to Schüller's observation that the contents of leucocytes (from the capillaries) were deposited in relatively large quantities in inflamed and injured tissues, states that these observations were confirmed as to bacteria, by Ribert, Orth and Wysokowitch.<sup>18</sup> For, whatever be the theories of the *manner* of transfer of the trachomatous virus from eye to eye, clinical experience proves that, given a conjunctival secretion, originating from whatever bacterium, if the conjunctiva be the seat of trachoma, it will, in many instances, if carried to another eye, cause a mixed infection of bacteria and trachoma germs, which, as the bacterial conjunctivitis subsides, will leave the second eye trachomatous.

Let me refer to those who still persistently adhere to the view that so-called *follicular conjunctivitis* and trachoma are separate pathologic entities, the experiments of Samperi and Axenfeld.



Samperi denied at the meeting of the Italian "National League Against Trachoma," in 1906, the contagiousness of follicular conjunctivitis, claiming that it is caused by irritants, dust, ammoniacal vapors, and other irritants, and that it attacks by preference those having a tendency to lymphatic enlargements; maintaining also that it may be aggravated (which is undoubtedly true) by bacteria present in the cul-de-sac, but not caused by them. He caused his own eye to be inoculated by a follicle of this disease without result, *but, in a foot-note states that Arenfeld was unfortunately successful, and that though there resulted no sequela, it took a year's treatment to cure his eyes.*<sup>19</sup>

*Recapitulation.* I feel justified in the light of the facts and views I have here given, in believing that it is from ignorance, or a lack of appreciation of clinical observations made by ophthalmologists, that most bacteriologists and pathologists have, since 1906, been pursuing a mistaken course in their trachoma investigations. To me it seems that too much time has been spent upon the study of tissue, and too little upon the lymphatics and blood-vessels of the conjunctiva, and the blood itself. I am not prepared to dogmatically assert that the bite of insects at points far distant (as the hands) from the eye, infect with trachoma the general circulation, and thus the conjunctiva, and that the bite of another insect at a similarly placed point on a second victim, can infect the latter: but I do claim that biting and non-biting insects are connected with the epidemic and endemic appearances of the disease, particularly the *endemic* prevalence, as in Southern Illinois and Egypt.

Observations in many parts of the world show that non-biting insects undoubtedly act as disseminators of trachoma. My own clinical experiences lead me to doubt whether this can occur when there are no bacteria in the ocular discharge, and the fruitless search of bacteriologists leads me and many others to believe that some protoplasmic microorganisms, allied in some way to vegetable organisms (bacteria) are the essential cause of the disease.

In closing this series of papers I would refer to one other feature of trachoma, and must quote again that observer who, before his death, did so much to stimulate the search for the cause of trachoma, Dr. Swan M. Burnett. "It would seem," he wrote in 1897, "that trachoma is not a simple local disease, due directly to a specific infection by a special germ from the outside, but is the local manifestation of a dyscrasia. \* \* \* In its general course,

behavior, and results it bears a close resemblance to tuberculosis (first noticed by Fallois in 1838) without being identical with that affection. Both are deposits or developments of foreign material in the tissue, which lead to its destruction and the formation of contracting cicatrices."<sup>20\*</sup>

As to the *treatment* of trachoma, I have not time at present, nor space in this journal, to enter into its details. Two years' experience, however, warrants me in expressing my increased confidence in the terms of theorem VII, Prop. 1, that the disease is most promptly cured when chronic by the application of the principles contained in the theory of thyroidase (opsonin). By this I mean the *natural* raising of the opsonic index (in contradistinction to raising it by vaccines and antitoxin injections) by any treatment or hygienic measure which will stimulate more especially the internal secretions (ductless glands). In my opinion the confusion and difference of opinion as to what follicular conjunctivitis is in its relation to trachoma, has mainly arisen from the fact that the former is trachoma in its earliest curable stage, when any hygienic, roborant, or other treatment which will quickly raise the opsonic index, will destroy the microorganisms and toxins of trachoma and cure the case. Such rapid recovery of the index is notoriously successful in the case of children, whom we most often see affected with so-called "follicular conjunctivitis," and which, in them, is so often quickly recovered from. On the other hand, I have myself seen in a boy of seven, a typical, mild "follicular conjunctivitis," in the course of a little over one year, while under my care, pass almost imperceptibly into as typical a case of trachoma, which I apparently cured for a period of eighteen months, when it broke out again, and was again subdued by copper sulphate. I have the notes of this case.

*Prevention.* While fresh air, exercise, and all hygienic measures should, within certain limits, prevent and alleviate the disease, and deficient ventilation, and filth be prevented (Theorem VIII, Prop. 2), it has been reported that the oiling of roads and streets with crude California coal oil, banishes all flies. Its odor is very offensive to many persons, and it is desirable that only the more potent constituents be used in houses, etc., yet it is commended undiluted for use on the soil of the Middle Western states, where trachoma is rampant, since a sanitary and a social end are encompassed by its use.

Finally, let us bear in mind Darwin's advice and "distinguish sharply between facts and the hypotheses which are put forward to account for facts." Some of the facts I have put forth in these papers are yet to be correlated with others, and I trust that others may be able to both add to them and advance the fight against a frightful scourge by uniting the clinical with laboratory observations. The time has passed when men can accomplish all they should by circumscribing too narrowly their field of labor.

Still more do I desire to commend to all workers the aphorism I quoted at the outset, of Dr. Bayard Holmes: "Only in the immediate need of a suffering fellow man is a sufficient motive presented to arouse the inspiration of rational deduction."

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## Reports of Societies

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SECTION ON OPHTHALMOLOGY, AMERICAN MEDICAL ASSOCIATION,  
JUNE 7-10, 1910.

WILLIAM CAMPBELL POSEY, M. D., Chairman.

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(Continued from September Number, Page 504.)

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### Sympathetic Ophthalmia.

Dr. H. Gifford, Omaha, says that in his early practice he used to think the charred and dead tissue left by the cautery an efficient protection against infection or reinfection, but latterly he has changed his view. He refers to cases of sympathetic ophthalmia following cauterization of iris prolapse reported by Trousseau, Cohn and others, and the finding by Frantz that the sloughs produced by the use of the cautery in the abdominal cavity seem to favor infection. Now when he finds it desirable to use the cautery, as in some cases of trachoma, he carefully scrapes away the dead tissue, and in some corneal ulcers after using the cautery he scrapes away the slough and applies trichloroacetic acid to prevent reinfection. How the cautery slough favors infection he cannot say, but he feels sure that it does. Whereas in certain old and small cases of prolapse it is desirable to use the cautery he believes that scraping the burned and dead tissue off and covering the raw surface with a conjunctival flap will exclude danger. The use of the conjunctival flap, however, implies an operation, and he has, therefore, experimented with trichloroacetic acid alone which leaves an eschar which is apparently a very unfavorable culture medium and the reaction following its use is very slight. He uses this now in all infected wounds of the eye vigorously for several days in succession and usually with very good results, though he reports one case in which the result was not satisfactory. The case was such an unusual one, however, that he does not feel sure that any blame could be placed on the trichloroacetic acid. He sums up his own conclusions as follows: "1. Fresh non-infected prolapses should be replaced, if possible; preferably by Dunn's method. 2. Prolapses which cannot be cleanly excised should, if possible, be

cauterized and the area scraped and protected at once by a conjunctival flap. 3. On account of the danger of sympathetic ophthalmia no prolapse should be treated by a hot metal cautery, unless a protecting conjunctival flap can be made to adhere to the area cauterized; it is probably safer to let the prolapse alone. 4. In some cases of large corneal prolapse to which conjunctival flaps can be made to adhere with difficulty or not at all the use of trichloroacetic acid (and probably of various other chemicals) produces a firm non-irritable scar. Whether this method is entirely devoid of danger remains to be seen."

*Discussion.*—Dr. R. H. T. Mann, Texarkana, Texas: The use of the conjunctival flap is not yet fully realized. It is a method which should be used whenever it can be. It will grow in some cases in which you think it will not grow, and even a staphylococcal may subside after the use of this flap.

Dr. J. A. Donovan, Butte, Montana: I am still a firm believer in the cautery, but the experience of Dr. Gifford would seem to cast some doubt. Where the field of prolapse is large enough I have abandoned the method of simple cauterization and first cut it off with the scissors before cauterizing. Most operators use too much heat and apply it too long. Use little heat, quickly searing or scorching or drying it. One point I make is to touch the edge of the cornea where it joins the iris with the cautery to get union between them.

Dr. Edward Jackson, Denver: Does Dr. Gifford feel the danger of infection with the use of the cautery where the iris is not involved? I feel that the best results are often obtained by leaving the prolapse alone. If the prolapse is large it will take some time to flatten down, but they do so and give smooth scars, and the pigmented iris tissues is better covered in than in some cases in which I incised the iris prolapse or treated it with the cautery or in other ways. With infected prolapse I use nitric acid, which is manageable. The natural healing process is to be respected. Strong antiseptic solutions do not promote satisfactory healing. Unless there is distinct infection I would not touch it with the cautery, or nitric acid or anything else.

Dr. H. Gifford, Omaha: I did not enter into the conjunctival flap question, but I wish to say that one stitch is sufficient to hold it if you dissect the flap up widely and pull it over. There is no danger in touching the cornea with the cautery, for, of course, we

do that in corneal ulcer: the danger is canterizing the tissues connected with the uveal tract. Many prolapses persist for years without doing harm if left alone, but occasionally an eye is lost from an uncovered prolapse, so I believe they should all be destroyed where they cannot be excised, and if the cautery is used the spot should at once be protected by a flap.

### Concomitant Squint.

Dr. A. E. Davis, New York, critically discusses the theories and treatment of squint. He finds the accommodation theory of Donders best meets the requirements as regards the causation of the condition, though both the accommodation and the fusion theories are necessary, one to the other, in accounting for the complex of symptoms—loss of binocular vision, more or less complete; amblyopia greater or less in the deviating eye; deviation of the visual axes, and suppression of the image in one eye. While giving the fusion sense a secondary position, Donders' theory emphasizes the physical side of the squint, while Worth's fusion theory emphasizes the psychic side. Since Donders' time the physical phase has been well understood and rational treatment has been applied to relieve the symptoms. In later years we must credit Worth for the recognition of the importance of the fusion sense also in the treatment. Congenital amblyopia may cause squint and it is seldom found in eyes that do not squint. The *fovea centralis* is at fault and though fusion of the outer contours may take place, they do not in the central region. In acquired amblyopia, the peripheral as well as the central vision is also impaired and surgical correction of the neglected squint may give rise to monocular diplopia or, if both eyes are left open, triplopia persisting, on account of some other portion of the retina assembling the function of the macula. The treatment is discussed by the author in detail which does not lend itself readily to condensation in a brief abstract. In all cases, however, the refractive error should be corrected under the influence of cycloplegics, and the author agrees with Worth that full correction of the hypermetropia by dimming the vision for the distance has a bad influence on the squint and increases the defect. Like the majority, he defers giving glasses to very young children, having never given them to a child under 18 months old. He finds it difficult, indeed, to order glasses for 1 of 2 years. In young infants

he depends on the occlusion pad and atropin, alternating the squint from one eye to the other till the patient is old enough to have glasses fitted. When we are able to use the stereoscope and develop binocular vision in these very young patients we can bring into action the powerful action of the fusion sense to correct the deviation and turn the eyes parallel. In a case of essential alternating squint and in neuropathic squint these exercises are not of much value. In congenital squint operation only is effective. In other cases Davis thinks operation is advisable as soon as the angle of squint ceases to improve under orthoptic treatment, and these exercises as a rule suffice up to the age of 3, after which stereoscopic exercises can be employed, to be followed by operation if necessary. The relative advantages of advancement and tenotomy are discussed, and of the former he prefers the method of freeing the tendon of the muscle and advancing near the margin of the cornea, with or without resection, especially in high degrees of squint. He practices what is termed the straight advancement operation and never resects the tendon of the muscle as far back as the belly, always leaving part of the tendon to secure the muscle fibers together. The knuckling or pseudoadvancement operation in his opinion should be abolished excepting for insufficiencies. Of all the methods of tenotomy he prefers that of Panas, in which the muscle is stretched before the tendon is cut. As to our choice of the operations to be performed, advancement or tenotomy, we should be guided by the nature of the squint and the effect to be obtained. He does not think we should be wedded to one operation, either advancement or tenotomy, but should use that which promises to give the best result. In high degrees of squint the Panas operation is preferable, while in low and moderate degrees of convergent squint advancement is advised in most cases. In divergent squint of myopia he now invariably employs the advancement operation in the low and medium degrees, and combines it with tenotomy in the high degrees. Since squint is a binocular affection, both eyes should be operated on at the same time. After any operative procedure stereoscopic exercises should be used for a while to complete the cure.

*Discussion.*—Dr. Nelson M. Black, Milwaukee: It would seem from the foregoing papers that none of the theories completely covers the etiology of squint, and that there is a marked interdependence of the Donders theory of associated hypermetropia and

convergence with the Worth theory of non-development of the fusion faculty. The return of squint the instant glasses are removed in patients in which this has been corrected would also indicate the relationship of the theories. In experiments on myself clear vision was not obtained until either convergence or accommodation was exerted, resulting in a loss of fusion with a marked homonomous diplopia, and an almost complete suppression of the vision of the non-fixing eye. So if there exists in a given case a certain degree of hypermetropia, and especially if one eye has better vision than the other, there is no chance for the fusion faculty to develop until the vision is corrected. We must give credit to Worth for having developed the most rational method of treating concomitant internal strabismus. It is useless to attempt to develop the fusion center without the use of a cycloplegic and without first having corrected the refraction so that similar impulses will be sent from each eye to the fusion center, and no one would attempt to operate on a child under 6 or 7 without finding out what change, if any, would be brought about by attempts to develop the fusion faculty, together, of course, with atropin or the occlusion of the fixing eye.

Dr. W. Reber. Philadelphia: If Worth had insisted on our general acceptance of the dictum of a fusion faculty he would have had most of us with him: but whether there is or is not a fusion center is a presumption: it cannot be an assumption. But it is the only theory that explains such cases as those of children under six with very low myopic astigmatism and convergent strabismus. Donders' theory in the majority of cases is a good working theory, but fails in alternating ametropes who squint and in the children referred to. I believe a combined theory, which will take account of Donders' theory, of Worth's fusion faculty and of the anatomic possibilities will account for practically all except congenital palsies, and I am convinced that the last named cases are more frequent than we have supposed. Heredity was traceable in 50 per cent of a series of cases which I reported six years ago, and obstetric injuries account for many cases of interrupted binocular vision, from retinal hemorrhages.

Dr. G. C. Savage, Nashville: Eyes with common brain-cell connection and endowed with muscle equilibrium will never squint. Wanting muscle equilibrium, but with a common brain-cell connection, they will squint when opportunity offers. Donders' theory as to hyperopia being the cause of internal squint is correct. Put



the glasses on in some cases and the eyes swing straight; raise them and they cross. Much credit is due Worth for his teachings; all credit to Donders for bringing out his theory, which is correct; but to Americans is due the credit for operative procedures that are worth while in the treatment of squint, such as the flat advancement operation without cutting the tendon of Lagleize, and as modified by Stevens. The shortening operation is the best.

Dr. Lucien Howe, Buffalo: The first thing we need to appreciate is the vagueness of the word squint. We must define terms exactly and say whether an eye turns in because of insufficient action of the abductors or because of excessive action of the adductors—whether it is an active or a passive esophoria, etc. We should study all cases thoroughly, not only under atropin to obtain the refraction, but as to the excursion with some form of tropometer, such as the little instrument I showed last year for estimating the muscle lifting power. We shall know then whether we are dealing with an active or a passive estropia. That will also answer the question whether to make a tenotomy or an advancement.

Dr. W. Zentmayer, Philadelphia: We must make a distinction between the motor fusion faculty and the cerebral fusion faculty. Although Worth is not clear on the point I take it that he intends to speak of a cerebral fusion faculty being at fault. I do not believe Worth refers to a fusion center, but to a fusion faculty. I believe the other causes of squint will clear up the question of myopes having convergent squint without referring them to the group of fusion faculty failure.

Dr. A. E. Davis, New York: I believe, as I said in my paper, that it requires both the theories of Worth and Donders to account for all cases of squint. I tried to give a reason to account for the general mass of cases. I did not want to quote foreigners exclusively, but it is amazing how few advances have been made in refraction since Donders. He even used the ophthalmometer and made accurate measurements. It is significant that a great number of the alternating squints can be accounted for by the accommodation theory; perhaps 90 per cent will be found to be hyperopic. Worth insists that this form is due to the fusion faculty being at fault. I think he is mistaken in that, but I want to give him credit for insisting on early treatment, the use of atropin in one eye, and not giving full correction of the spherical part of the error.

**Chronic Glaucoma.**

Dr. A. Greenwood, Boston, speaking of the filtering cicatrix which some operators have considered desirable to be left after the operation for chronic glaucoma, advocates the method of Lagrange, the so-called sclerecto-iridectomy, which is briefly described by him as follows: "It consists in a sclerocorneal incision well into the angle of the anterior chamber, with the knife held, in cutting out, with the edge slightly backward so as to bevel the sclera and make a broad conjunctival flap. Then, with the conjunctival flap pulled down over the cornea, a portion of the beveled edge of the sclera is cut off with curved scissors, the amount varying with the degree of pus tension, as experience shows that the greater the tension the less the amount necessary to remove. A good iridectomy is then made and the conjunctival flap replaced after all iris tissue has been freed from the angles of the incision. In regard to this latter point, Lagrange holds that his operation has not been properly performed if any entanglement of iris tags occurs." Greenwood has performed this operation 9 times, and has not found it difficult or disturbing to the eye. He goes extensively into the literature of the subject and the various other operations which have been recommended to produce the same result. Two cases of his own are reported. The results were satisfactory, the glaucomatous condition having been entirely relieved. The other Lagrange operations he has performed are more recent, but they show evidence of aqueous escape into the subconjunctival spaces. From his reading and his personal observation he feels sure that the Lagrange operation or one of its modifications has come to stay and will be a distinct advance in the operative treatment of chronic glaucoma. It makes the effect of an iridectomy more marked at first and more permanent later, keeping what vision is left at time of operation much longer than can be hoped for from miotics, simple iridectomy, sclerotomy or cyclodialysis.

*Discussion.*—Dr. John E. Weeks, New York: The proceeding of Lagrange impressed me favorably and I have used it about 37 times. The operation is the classical iridectomy and in addition the excision of a small piece of sclera. The incision is made with the Graefe knife, making a large conjunctival flap, then by pulling the flap forward the piece of sclera can be exposed and rapidly excised by means of the curved scissors. The results have been favorable. In a patient seen recently on whom I had operated

three years ago there was an actual filtration cicatrix in each eye. The conjunctiva over the site of the iridectomy was somewhat raised, edematous, and by pressing on it the edematous condition could be slightly increased. This has not occurred in all, but the various cicatrices as represented by Lagrange have been observed. The observations of Henderson and his histologic experiments seem to negative the claims of Lagrange. This is true in many, but not in all, and in some we have a filtering cicatrix. If tension recurs it is much later than in cases in which a simple iridectomy has been done. I shall continue to use the operation of Lagrange.

Dr. H. Gifford, Omaha: I think all of you have seen these blebs remain after an iridectomy, and if you keep up massage it will remain, but the question whether that will lower the tension permanently in chronic glaucoma is a different one. In many cases with this bleb I have seen the tension go up just as it has in other cases. It will take a good deal of time to tell whether anything is gained by this cutting out of the sclera, and the question of its effect on the tension is still an open one.

Dr. Allen Greenwood, Boston: Holth in his article says no case is successful unless the tension has remained normal for two years and there is at that time evidence of a filtering scar. This Holth claims he has attained, and I have seen the tension better than after an ordinary iridectomy, particularly in the cases in which the tension before the operation was considerable. It is these cases, as pointed out by Lagrange, in which you get the best results—cases in which there has been no inflammatory disturbance of the eye, but a cupping of the disk, with slight increased tension, or occasionally plus or one over. Since writing my paper I have done additional Lagrange operations, so that in all fifteen eyes have been operated on with the happiest results, and later operations show even more clearly earlier evidence of fistulization than the first.

### The Noguchi Serum Reaction and Eye Lesions.

Dr. A. E. Bulson, Jr., Fort Wayne, Ind., describes in detail the Noguchi reaction and its use, and quotes the articles of Swift and others, bearing out the claims of Noguchi as to its greater ease and simplicity and equal or greater reliability in the diagnosis of syphilis as compared with Wassermann reaction. Noguchi's cases of eye disease tested by this reaction and those of Swift are quoted. The author gives also a tabulated statement of his own experience

with the method. The cases numbered in all 26. Of these 13 were negative, 6 of them in patients who gave no history of specific infection and who received no antisypilitic treatment. Another case denied infection but presented manifest evidences of the disease and had been long under specific treatment which probably accounted for the negative reaction. Four patients who gave a history of syphilis and who had been treated for the same also gave negative reactions and probably for the same reason. In other cases in which there was no obtainable history and no lesions other than in the eye the serum reaction was taken as demonstrating the specific etiology, and the result of treatment confirmed this. Various writers have asserted that the reaction frequently disappears after a short course of treatment, often to return again after a greater or less lapse of time. In Bulson's cases treatment seemed to bear out this assertion. Noguehi admits that the negative reaction under specific medication is not always a reason for the cessation of treatment. Bulson concludes that the reaction is destined to be of value to the ophthalmologist in diagnosis of doubtful cases and as a guide to treatment. To be reliable, and therefore most valuable, it should be applied to cases where reasonably complete history has been obtained. The reagents should be prepared in an accurate and careful manner; the technic accurately followed and the results valued according to the experience and skill with which the tests have been made. The reaction should be verified and control tests introduced as often as possible. Furthermore, all things being equal, the results will be most reliable in the hands of those who have skill and facilities in hemolytic work.

*Discussion.*—Dr. E. V. L. Brown: In a recent paper by Alfred Leber, of Berlin, which covers some 300 cases of the Wassermann reaction, he gives many data that coincide with those of Dr. Bulson. 231 suspicious syphilitic eye diseases gave a positive reaction in 10 per cent; 74 cases of certain syphilis gave 79 per cent of positive reactions; 22 cases of eye disease with metasypilitic diseases, tabes, general paralysis and lues cerebri, gave 82 per cent positive. In 90 per cent of 59 cases of hereditary eye lues a positive was obtained; 74 per cent of 82 cases of keratitis parenchymatosa were positive; these included 63 per cent of acquired and 11 per cent of hereditary syphilis. In general the reaction is negative in 10 to 20 per cent of cases not treated and 30 to 40 per cent of those who have been treated. This restricts the application of the test.

Dr. A. E. Bulson, Jr., Ft. Wayne: The statistics of Dr. Brown apply to the Wassermann, while my paper relates to the Noguchi reaction. Comparative studies by competent observers seem to show that the Noguchi is the more reliable. For instance, in 244 cases of syphilis and parasyphilitic conditions, as reported by Noguchi, the Wassermann gave 183 and the Noguchi 211 positives. Other figures tend to show that the Noguchi is the more accurate and therefore of more value; but it must be remembered that the value of the Noguchi depends in large measure on the virulence of the infection, the stage of the disease, the influence of treatment, the reliability of the materials employed and the skill in their use. But carefully used the reaction will prove of inestimable value in ophthalmic cases of doubtful etiology, particularly fundus lesions, ocular paralysis and uveal disturbances. The Noguchi is more delicate and less complicated.

### **Rupture of the Eyeball.**

Dr. E. C. Ellett, Memphis, Tenn., after reporting a case of spontaneous rupture of the eyeball which was different from any he had previously encountered, gives a review of the published reports of cases of similar accidents. In his case there was no history of injury or straining at the time of rupture, but there was marked arteriosclerosis, and it is reasonably sure that it was due to or accompanied by an increase of tension, judging from the history as given and the microscopic appearance of the nerve head as subsequently determined. In all, he has collected twenty-two cases of this accident from the literature, all in elderly individuals and all except one in subjects of chronic glaucoma. The hemorrhage in all cases proceeded from the vessels of the chorioid, and the rupture of the ball occurred in the cornea in all but the one case which was not glaucomatous. Discussing the question whether the rupture or the hemorrhage was primary, he would favor the latter. Glaucoma on theoretical grounds would not appear essential to the occurrence of this accident, but it is too generally present to be regarded as a coincidence, and such rupture must be put in the list of possibilities with that condition. Generally the eye should be removed in such cases, though sympathetic trouble has not been observed to follow its retention, perhaps on account of the short subsequent life of the patient.

*Discussion.*—Dr. J. M. Ray, Louisville, Ky.: I saw the pa-

tient whose case is reported by Dr. Ellett while suffering from iritis, which recurred at long intervals, first in one eye and then the other. The iris presented a number of adhesions to the lens capsule and was atrophic. The cornea would become hazy and the vitreous contained floating particles. There was increased tension during the attacks of iritis. Stigmata of syphilis were present in nose and pharynx. I advised iridectomy to check the degenerative changes that were indicated in the ciliary body and chorioid, and I can see how an acute glaucoma could have developed. It would seem impossible that the pressure of blood in an eye could be greater than the pressure in the blood-vessel, but in this case the changes were ideal for a rupture, although I feel sure the patient had no corneal ulceration.

Dr. S. L. Ledbetter, Birmingham, Ala.: In a case seen last fall one eye had been removed after rupture a year before. The same condition now existed. There had been a history of inflammation with intense pain just before the rupture. There was a wide open wound and the ball was filled with clot. The woman was 65, with probable arteriosclerosis. I reported this case at the meeting of the Southern Medical Association at New Orleans.

Dr. E. C. Ellett, Memphis: Since writing my paper and since the pre-session reprints were printed other cases have come to my knowledge, some of which were not found in my search because described under other heads in the indexes.

### **Serum Vaccine Therapy.**

Serum vaccine therapy as applied to ocular diseases is discussed by Dr. John E. Weeks, New York. In tuberculosis of the eye he says Koch's original tuberculin is very little used for therapeutic purposes. Koch's new tuberculin and the bacillus emulsion seem to possess great therapeutic value, and the bouillon filtrate is thought to be the most efficacious. Von Hippel's method, beginning with a very small dose of either of these 3 preparations, is favored, he says, by those who have had the most experience. It is usual at first to use 1/500 mg., increasing by the same amount each dose which is repeated every third day, and less frequently as the patient improves. The tuberculin should not be given if there has been any reaction until the temperature has returned to normal and remained so for at least 2 days. Larger doses will be tolerated as the treatment advances, but the maximum should

not exceed 1 mg. The tuberculin properly diluted is injected into the subcutaneous areolar tissue after the skin has been thoroughly rubbed with 95 per cent alcohol. He has elsewhere reported 58 cases of ocular tuberculosis in which virtual cures were obtained in 35 cases and improvement in 15 cases. The form of tuberculosis least amenable is the conglomerate tubercle, which is observed in the vascular tunic of the eyeball and the optic nerve. In using vaccines the autogenic strains are the most efficient, but if they cannot be obtained some polyvalent serum may be employed. Gonococcic vaccine, though well tolerated, is given in smaller doses than formerly; they may range from 2,500,000 to 50,000,000. It is generally recognized that this vaccine is of little value in acute gonorrheal affections of the eye. In chronic conditions it is likely to be more effective. Streptococcus vaccine is mentioned, but results are not reported, while the value of staphylococcus vaccine in eye troubles seems to be established. Several brief notices are given of reports of cases in which Coley's vaccine was employed for malignant disease of the eye, apparently without very satisfactory results. The value of diphtheria antitoxin is well known. The gonococcus serum of Rogers and Torrey has shown promising results in iritis in Knapp's hands, and in other conditions it has been found ineffective in acute infections, while its value in subacute and chronic cases is dubious except in chronic gonorrheal joints. The results obtained by the use of streptococcic serum have been variable. Other serums are mentioned, such as the tetanus, typhoid, Deutschmann's serum, etc., but Weeks does not find them of very marked or positive value in the treatment of ocular troubles.

*Discussion.*—Dr. M. Wiener, St. Louis: The subject opens up a broad domain in ophthalmology. My experience has been limited mainly to tuberculin and the Wassermann reaction. The latter I have found valuable in doubtful cases where a positive reaction is obtained. A student came to me with a double optic neuritis, which I found gave a positive reaction and cleared up under mercury. I agree with Dr. Weeks as to the tuberculin test, and have had two unpleasant experiences with the Calmette. The Wright treatment is of undoubted value in certain cases. A case of successive crops of inflamed chalazia was cured by the Wright method under indications afforded by the opsonic index after it had resisted every other means.

Dr. H. Gradle, Chicago: A patient with a history of gonorrheal rheumatism with iritis recurring for years had been treated by me a year previously for iritis. The chamber was partially filled with a purulent exudate, and from experience I could predict a tedious course. I gave 25 million stock gonococcus vaccine and next day the exudate was diminished and replaced partially by hemorrhage. In four or five days it had cleared up to a seemingly impossible extent. The other eye became slightly involved, while in previous attacks it was severely affected. In regard to my experience with staphylococcus vaccines, referred to by Dr. Weeks, I feel confident on account of my uniform results in persistent and recurrent phlyctenular conjunctivitis that vaccination with staphylococci will produce results, the benefit showing itself only after the second injection.

Dr. John Green, St. Louis: A case which may throw light on the proper dosage of tuberculin is the following: A young woman five years previously had passed through a severe iritis and keratitis of the left eye. The nature of the trouble was unrecognized and a large central opacity resulted with nearly complete posterior synechiae, and vision hand-motion. Three months prior to coming to me there appeared a central keratitis of the right cornea. Dr. Prince, who recognized the tuberculous nature of the trouble, gave her injections of tuberculin TR beginning with 0.001 mg. She moved to St. Louis and came under my care. Influenced by Wright I began with .0003 mg., controlled by the opsonic index, gradually increasing it to .001 mg. It cleared up, but recurred later with a dense infiltration of the cornea, and I began with .002 mg. and gradually ran it up to .02 mg. with a notable clearing of the periphery of the cornea, but the process had gone too far to permit complete clearing. This indicates that we should not rely too closely on the opsonic index and proves von Hippel's contention that large doses are required in tuberculous affections of the eye.

Dr. H. Gifford, Omaha. A short time ago I had a gonorrheal involvement of the wrists and ankle joints with a marked metastatic gonorrheal ophthalmia, which showed no germs, however. Two doses of 25 million gonococci on two successive days brought about a complete recovery. The same treatment in an ordinary infective case brought no result.

Dr. E. V. L. Brown, Chicago: Davis asserted two years ago



that recurrences were too frequent with von Hippel's treatment. Koch advised him to use bacillen emulsion, and in 13 cases there were no recurrences. I think we should use that if we are to follow von Hippel.

Dr. John E. Weeks, New York: In regard to the dose of vaccines, we must remember that these are antigens, and we should determine the reaction of the system to vaccines. The tendency is to give smaller doses at first and work up until one gets the greatest degree of benefit. My experience with pneumococcus serum has not been satisfactory, nor have I been able to learn of satisfactory results from any one but Romer himself. Tuberculosis of the iris sometimes disappears under mercury and the iodids, and I am therefore not surprised to hear that it has disappeared under mercurial treatment, but it is not uniformly successful, as I think we are agreed. The original tuberculin has value, but is less efficient than the emulsion or the filtrate of Denys, because it is subjected to a higher temperature in its preparation and its therapeutic value thereby partially destroyed. It is not always practicable to employ the opsonic index, and results have not always been satisfactory and its use has been largely omitted in consequence.

### **Lacrimonasal Disease.**

First noticing the importance of free drainage of the mucous lined canals of the body as an aid to their physiologic functions and preventing their infection, Dr. S. L. Ziegler, Philadelphia, advocates the use of rapid dilatation of the lacrimonasal duct in cases of its disease or obstruction. It is estimated that at least 90 per cent of lacrimal disorders have a nasal origin, the irritating and infectious secretions passing by capillarity up into the lacrimonasal duct or infection occurs by continuity through the deeper tissues. When at the same time the duct is narrowed and free drainage prevented the morbid conditions continue. Ziegler describes his instrument and the method of its use. His dilator, which was devised by him in 1890, is based on the old conical dilator of Levis but differs from it in several points. It is made in the shape of a double bayonet, 2 sizes being joined on a single handle. The smaller end is somewhat sharp pointed and has a diameter of 2 mm.; the larger one is duller and 3 mm. in diameter. A needle probe is also devised for use in cases of atresia. Either the needle probe or the small end of the dilator may be

used to dilate the punctum and canaliculus, but the larger dilator should be always used to stretch the duct. As the operation of rapid dilation is somewhat painful, he uses it under anesthesia, usually local, but sometimes general in nervous patients. He describes his manner of manipulation: holding the dilator vertically in his right hand, the lower lid being drawn down and out, the small end is inserted into the punctum with slight force. Then, still holding the lid tense, the dilator is rotated from the vertical to the horizontal position and slowly but firmly passed through the canaliculus, the shaft being directed obliquely upward and inward until the point rests solidly against the bony wall of the sac. Then the small dilator which had been used is withdrawn and the large dilator inserted, as in the former case, until firm bony resistance is again felt. The lower lid is then released from the traction of the left thumb. The point of the dilator is held snugly against the bony wall while the shaft is again raised to the vertical position and half rotated on its long axis until the shoulder of the bayonet is turned backward. Still hugging the bone, the point describes a half curve backward and downward as it slips over the back of the crest and engages in the sac. It is then pushed with firmness and considerable force downward and slightly forward through the nasal duct into the nose, allowed to remain *in situ* for a moment, or longer if needed, and then withdrawn directly upward. The nose frequently bleeds for a few minutes and patients should be warned not to blow it for 24 hours, to avoid a local emphysema. The after treatment is usually very simple, only a soothing eye wash, to which epinephrin may be added in the proportion of 1 to 16. The operation is indicated whenever a permeable canal is desired. But the author thinks the most striking success is shown in ulcerated lesions of the cornea, especially those of the recurrent type. In sloughing keratitis, however, we must supplement the dilatation of the duct by disinfecting the corneal slough with formalin 1 per cent and using an antiseptic spray or wash in the nostril. For many years he has performed rapid dilatation in every case of enucleation as a routine measure, solely to prevent any secondary disturbance by irritating secretions in the socket. He also uses it in trachoma for free drainage of acrid material. Allied measures such as irrigation, incision, stricturotomy, and the insertion of styles, etc., may be required to meet special conditions and each of these measures is

discussed as to its indications, etc. The nose should also be treated to reduce hypertrophied tissues and secure ventilation and free drainage. As the anterior portion of the inferior turbinate sometimes obstructs the lacrimal drainage, its fleshy folds should be excised when necessary. Temporary disinfection of the nostril is especially indicated when direct ocular infection is suspected. In a very few cases it may be necessary to repeat the dilation, and he repeats the stretching in cases in which a long course of nasal treatment has been instituted and completed. He has abandoned the use of all lacrimal probes for nearly 20 years, relying solely on rapid dilatation of the duct to secure a permanent patulous drainage.

*Discussion.*—Dr. H. Moulton, Fort Smith, Ark.: Rapid dilatation is not new. Juler refers to it, and the bivalve dilator of Galezowski is well known; but Dr. Ziegler's method is unique in the shape of the dilator and in the fact that it is to be passed through the uncut punctum and canaliculus. Does it close again, or does it so paralyze the sphincter that it cannot close until the epithelium reforms? A clean cut is not harmful and I have never seen epiphora remain afterward if the disease below was removed, and I do not hesitate to make the cut. How long does this dilation last? Its painfulness may limit its use in private practice. I endorse the use of lead styles, as advocated in a paper at Chicago in 1908 by me, and I have excellent results. I do not find it necessary to have the styles grooved, and the fuse wire of the electricians is the best material for them.

Dr. J. L. Thompson, Indianapolis: I have operated on the ducts for 40 years. At first I opened the upper canaliculus and then resorted to styles, not like the recent large ones, curving them out over the lid, and was using them when Theobald began using the large probes. I and others have had the poorest successes in the treatment of lachrymal duct troubles, on account of the frequent relapses.

Dr. Donovan: At Denver I advocated cutting the upper canaliculus instead of dilating, and still use that plan. I then start with a Theobald probe number 6 and skip two or three at a time and reach 13 or 14, and then afterward a number 12 at intervals of several days, covering a few weeks of time. I also inject into the duct and sac an ointment of biniodid 1 to 5,000 with wool-fat and petrolatum, with good results.

Dr. Charles H. Williams, Boston: It seems to me in many cases we would get better results by removing the sac rather than by probing. Has Dr. Ziegler had trouble from the very sharp probes described in getting false passages?

Mr. J. Herbert Parsons, London: I have strong opposition to probes, as expressed in papers in England, and believe the best treatment is extirpation of the sac. I have had opportunity to compare the two procedures, and I believe the results would convince most people that extirpation is the superior method. The probe of Dr. Ziegler may have special advantages over other probes, but the pain and discomfort from the necessary repeated probing seems to be a grave objection as compared with the slight discomfort experienced after extirpation.

Dr. John E. Weeks, New York: My experience with probing has been so unsatisfactory that I have given it up. It must be repeated for a long time, as Mr. Parsons has said. I employ extirpation in all cases of chronic dacryocystitis when the patient will submit, and in other cases use styles. Lead, silver and iron are objectionable on account of deposits and corrosion, and I use a gold style 1.5 mm. in diameter which does not entirely fill the canal. The patient may have to wear it a year, but three months may be enough. The results have been satisfactory.

Dr. Hiram Woods, Baltimore: After Dr. Ziegler wrote his former paper claiming that conjunctivitis, keratitis and blepharitis might possibly be due to reinfection of the lachrymal sac from the nasal passages, and emphasizing that epiphora is not a diagnostic mark of such lachrymal infection, I began to look into the question with reference to some of the chronic inflammations inexplicable otherwise and began using his opener. I was surprised to find how easy it was to introduce it through the punctum and canaliculus, making way for the use of a 2, 3 or 4 Theobald probe, and how frequently such patients recovered without splitting the canaliculus. The dilatation of the punctum preserves the siphon-like action, while splitting destroys it, and perhaps a good deal of the epiphora that follows splitting is the result of this. Many patients with dacryocystitis would not recover without extirpation. Many patients are cured by the dilatation with this probe. One has remained cured a year, and several others that had been subjected to the excision operation and subsequent dilatation with the probe.

In cases of conjunctivitis, blepharitis and dacryocystitis the results have been good when treated by Dr. Ziegler's method.

Dr. S. L. Ziegler, Philadelphia: Complete atrophy does not occur following stretching of the soft tissues, and following this rapid stretching there is no contraction. I have recently seen one case dilated fifteen years ago when the child was 3 months old, and another that was dilated eight years ago and the results were perfect. I use the large end of the dilator in every case. In post-enucleation discharge I have been able to relieve the condition by dilating the duct. Apparently there have been enough regurgitation from the nose to produce this condition. The Beck bismuth paste used with the cold paraffin syringe has given very satisfactory results. I have not seen a false passage as there is no room in the duct to make one unless there was necrosis of bone, and then one would need an eye in the end of the probe. I did not raise the question of extirpation, but intentionally avoided it. One patient, who said the sac had been removed three times, was dilated with relief to the dacryocystitis which still existed.

### **Detachment of the Retina.**

Dr. Casey A. Wood, Chicago, after a study of the separation of the retina, including an historical review and a general discussion of the operative treatment as it has been recommended by various authors, says that any one who has worked up the subject will come, he thinks, to the following general conclusions, which are stated here in somewhat abbreviated form from the text. Inasmuch as separation of the retina is not a distinct disease, but merely one sign, though a very important one, of several different affections, it cannot be expected to be cured by any one method or operation. A large percentage of retinal repositions, including some that follow operative measures, belong to the class of spontaneous cures. The result may have been hastened or aided by the measures employed, but it would probably have taken place under any conditions. As regards prognosis, the more hopeful cases are of the most recent limited varieties, those due to traumatism, postretinal hemorrhage and the like, as well as those from removable causes. Old extensive detachments, especially if associated with marked retinal, vitreous, or choroid degeneration, are not likely to get well under any treatment. A long separated, starved retina rarely regains its functions. Recurrence of the detachment is a disappointing feature of the

treatment, and this should be considered by both patient and surgeon. It has been abundantly demonstrated, however, that patients with separated retina have recovered after several relapses and multiple operations. No patient should be regarded as permanently cured until at least a year after the replacement of the detached membrane. While relapses have been recorded after several years, they are unusual. When a patient presents himself it is best to try, for, say, a month—indefinitely as long as improvement continues—non-operative measures. The cause should be determined, if possible, by thorough study so that it may be removed, if possible. With this casual treatment, give subconjunctival injections, instill atropin and keep the patient in bed. Pilocarpin sweats, with iodid or sodium salicylate, are also generally indicated. Failing to improve vision or to replace the separated retina by milder measures, resort should be had to operation, and the question as to the best method arises. As the function of the retina weakens by continuance of the displacement, the sooner the operation is performed the better when it is found necessary. Deutschmann advises against his operation as long as the postretinal fluid is held within the upper quadrant of the globe. If we cannot use his method for this reason there can be no objection to the employment of scleral puncture combined with punctiform cautery of the denuded sclera over the site of the detachment. In those cases in which the sac occupies, as usually, the lower aspect of the hyaloid chamber, Deutschmann's method of bisection should be the operation of choice, whether or not there are evident rents in the retina or visible fibrillæ in the vitreous. Two weeks after an intrabulbar operation a careful examination of the eye should be made—with the electric ophthalmoscope so that the patient may keep the prone position, hand perimeter, wards, charts, etc.—to decide whether improvement has taken place in the local conditions, as well as in central and peripheral vision. Assuming the eye to have recovered from any operation, that is to be free from either intra or extra-ocular inflammation, the same or another operation may be done in from three to six weeks' time. "In unpromising cases Deutschmann's intra-ocular injections of animal vitreous is in order, although Mueller's exsection of the sclera seems a rational, though formidable, procedure, which an improved technic and a wider experience may yet demonstrate to be of great value in the conduct of this extremely serious condition."

*Discussion.*—Dr. L. Webster Fox, Philadelphia: The retina being attached at only two points is kept in place by the pressure of the vitreous, and separation is only possible when this pressure is reduced by disease or traumatism. Frequently shrinking of the vitreous tears the retina, permitting some of the fluid contents to get behind the retina and assist in the separation. The ordinary treatment—rest in bed, potassium iodid, mercury, pilocarpin, electric light sweats and conjunctival injections—forms one of the most unsatisfactory chapters in ocular therapeutics. The most satisfactory results have been secured by puncture of the sclera by means of the broad knife-needle and the withdrawal of the subretinal fluid. The incision is about three lines long and parallel with the scleral fibers, through the conjunctiva, which is made taut by the excessive rotation of the eyeball. This procedure may be repeated a number of times and is safe. The Deutschmann procedure is much more difficult to carry out. The younger the patient the more favorable the outcome. Beyond 40 the prognosis is unfavorable under any form of treatment. Where the subconjunctival treatment as outlined by Ramsey fails, the operative method should be carried out.

Dr. Oscar Dodd, Chicago: In one case I was able to secure complete reattachment of the retina by means of the Deutschmann operation repeated twice, together with complete rest in bed. Results since have not been so successful, although obtaining some improvement. But with the puncture described by Dr. Fox and with the galvano cautery I have been unable to get as good results as from the Deutschmann operation. Improvement depends largely on the co-operation of the patient. I have never seen benefit from injections of salt solution except as combined with puncture. The two essentials are removal of the subretinal fluid and rest, allowing adhesions to form.

Dr. H. Gifford, Omaha: The Deutschmann operation simply makes a scleral puncture and two holes in the retina. What we want to do is to let out the fluid behind the retina, and that is what these holes in the retina will not do. The only good is from the scleral puncture, or where there are bands in the vitreous, which may be cut. Another objection to this operation is that we are asked to wait until the retina falls to the bottom of the vitreous, when we know the sooner it is reapplied the better. In the cases I have seen the detachment has been in the upper part. Why not

let the fluid out at once and not wait a month. Late detachments are important; I have seen two that occurred four years after injury. In one a half hour after the injury there was no detachment, the patient had normal vision for four years and then a detachment, with loss of vision. Simply burning the sclera on the outside cannot be effective. If you are going to do anything with the cautery, puncture the sclera with it.

Dr. S. L. Ziegler, Philadelphia: My method is somewhat different. In a few cases I have been very successful, in some moderately so, while others have been failures. In one case vision was practically *nil*, but has risen to almost normal and for three years the patient has been able to do his regular work. I use the von Graefe knife and make the scleral puncture about 6 mm. from the limbus, midway between the recti muscles, with the back of the knife toward the cornea, and penetrate deep enough to enter the space between the retina and the sclera and rotate the knife sufficiently to allow the subretinal fluid to escape. Then rotate the knife back to the line of the original incision and with a quick thrust pass the knife through the retina. I then rotate the knife at right angles and while drawing it out of the wound turn the edge of the blade back against the retina, so that the incision in the retina is made larger than that in the sclera. This secures a T-shaped incision which allows subsequent accumulations of subretinal fluid to escape and the weight of the vitreous to press the retina against the sclera and keep it approximated until adhesion occurs.

Dr. Hiram Woods, Baltimore: The term "cure" seems to need exact definition. In one of my cases there was spontaneous return of the detachment without treatment; in another reattachment after puncture; and in a third after two months in bed with treatment by diaphoresis. One remained well for eighteen months and another for three years, but only in the third case was there improved vision. The upper half was detached and central vision was lost. After reattachment central vision became 20-30, but vision in the lower field was never regained, due to the retina falling over the fovea, I believe. I have never seen the separated retina regain vision.

Dr. Allen Greenwood, Boston: I think it is fair that the underlying conditions should be told us in every case reported, because the separation varies much. In a myopia of 20 D the chances of operative cure are *nil*. If the myopia is not too high



operation gives the best chance, but in simple cases of traumatic detachment is not necessary, or in cases of separation from edema filling beneath the retina. Cases occurring in pregnancy recover, and I think in reporting cures the underlying conditions should always be given.

Dr. Casey Wood, Chicago: The detached retina tends to replace itself without treatment, if there is not something to hold it away from the choroid, and especially so in recent cases, and that is why simple puncture induces a reattachment; but there must be an opening in the retina or sclera. One of the purposes of the Deutschmann operation is to secure such openings in the retina. In passing, the knife section is made not only in the retina, but through the fibrillæ of the shrinking vitreous, the contraction of which pulls the retina away from its natural bed. Simple puncture cures sometimes. The patient should remain in the hospital while under the surgeon's care, and should remain in bed, and I do not believe a simple puncture is justifiable when one may more certainly cure the patient through bisection. But I would try the non-operative methods first. In Dr. Ziegler's operation, which is an advance over simple puncture, he has only one puncture through the retina and only one possible point of attachment. Dr. Woods will see from the paper that I referred to the dictum of Hirschberg that one may secure a reattachment of the retina with a return of vision, or an improvement in both central and lateral acuity—that is, a physiologic cure; or it may resume its original position without improvement—anatomic cure.

#### **Enucleation in Panophthalmitis.**

Dr. R. L. Randolph, Baltimore, while admitting that meningitis is a rare sequel of enucleation in the active stage of a purulent panophthalmitis, thinks that such cases should be watched with care as fatal meningeal complications have followed, especially in purulent panophthalmitis with great phlegmon of the orbital tissues. He reports a series of experiments made to determine whether meningitis could be produced in some of the lower animals by first producing a purulent ophthalmitis and then removing the eye in the active stage of the disease. Rabbits and guinea-pigs were employed and the experiments were always made under etherization. The results of 43 such experiments agree with clinical experience in the human subject, namely, that a death from meningitis thus induced is an exceptional event. It is his practice, however, to

abstain from enucleation in spite of the evidence of its comparative freedom from risk. He always makes 2 incisions in panophthalmitic eyes, one on each side of the cornea about a quarter of an inch from the limbus and a little below and parallel to the equator of the eyeball, as he is of the opinion that these incisions constitute a measure safer than enucleation, performing enucleation only when a speedy and painless recovery is very important, as, for example, in old and feeble patients.

*Discussion.*—Dr. L. Webster Fox, Philadelphia: I have had an extended experience in enucleation of the eyeball. Ironworkers who lose their eyes by accidents with hot metal rarely have panophthalmitis, but many cases are found among brass and copper workers. Where the substitute operations cannot be performed, where pus has formed and there is destruction of the interior coats of the eye, I enucleate. I do not know how many such cases I have encountered, but I would not hesitate to enucleate in an acute panophthalmitis. I have never had a case of meningitis follow, but we do get metastases following acute gonorrheal inflammation of the joints, or following a chorioiditis. They come in the same class as panophthalmitis, but the resistance of the posterior part of the eye seems to prevent the backward passage of the streptococci, and the stretching of the ball and the weakening of the cornea allows the pressure forward and the pus currents are directed anteriorly.

Dr. C. J. Kipp, Newark, N. J.: During fifty years of practice I have enucleated every eye that presented this condition and have never regretted it. The trouble is thus cut short, and I have never seen the slightest harm result from it.

Dr. L. H. Taylor, Wilkesbarre, Pa.: It seems to me the question is not whether it is a dangerous procedure, but whether it would not be more dangerous not to enucleate. I have performed many and have always felt that it was my duty to do so, and I have had no bad results. In my early practice I operated on a great many, but believe there are not so many cases in recent years in proportion to the number of enucleations.

Dr. C. H. Williams, Boston: In the case of a man of 70 with panophthalmitis, but otherwise in good health, I enucleated and there was apparently a meningitis following with death in two weeks. I was unable to obtain an autopsy, but it shows that there

may be a certain amount of danger, though not enough to prevent enucleation where it seems necessary, if we are careful in regard to our asepsis.

Dr. S. L. Ledbetter, Birmingham, Ala.: In a large percentage of the cases in which I have done enucleation I have found rupture of the sclera and pus in the tissues behind the ball. Taking that view, there is more danger in leaving the pus than in removing the ball and allowing drainage.

Dr. E. C. Ellett, Memphis: Something must be done, and the alternative to enucleation is evisceration. Lest we should think this absolutely safe I should like to relate the case of a negro who was shot with a slingshot, the missile being a piece of a small iron nut. He was sure the missile had fallen to the ground and beyond dressing the eye nothing was done. He developed panophthalmitis. Evisceration was done and the body found and removed from the eye, the wound of entrance being entirely through the cornea. The patient died of general sepsis, and a culture from the fluids of the eye at the time of evisceration showed colon bacillus.

Dr. Prince, Springfield, Ill.: Ever since Wisner suggested the danger of enucleation in panophthalmitis I have invariably eviscerated, with no complications following. I at first had severe inflammation following, but prevented this by cauterizing the stump with phenol and filling it with iodoform. In every case free from sepsis I introduce a gold ball for the purpose of preserving a good stump and getting a better cosmetic effect.

Dr. S. L. Ziegler, Philadelphia: I never hesitate to enucleate. One case resulted fatally. It was a case of lime burn, followed by severe inflammation. I first saw the patient three or four days after the accident, and there were symptoms of a mild meningitis. There was some discharge from the eye which continued after enucleation. In another such case I would split the eyeball, dress it septicallly, allow the inflammation to subside and then decide on further operative procedure.

Dr. Edward Jackson, Denver: I have never seen a serious result from enucleation, but I have sometimes enucleated, and sometimes eviscerated from the fear that something serious might result. I saw one case in the practice of another physician, not severe, in which no operation was done but in two or three weeks a meningitis developed and followed a slow course to a fatal termination, though the eye had not been interfered with.

Dr. Hiram Woods, Baltimore: This question sometimes assumes importance from an economic point of view. A man was injured in the afternoon and brought bleeding from the nose into the hospital late where he was cleaned up by the intern. A crow-bar had gone through the left eye. The next day I found inflammation of the inner wall of the orbit, but there was no pain and the eye was wide open, and I decided to let him alone. He did well for two weeks and then developed a meningitis. The Flexner organism was found and the Flexner serum used. The man died and a lawsuit resulted. What would have been the result if the eye had been taken out? Operation was not done because of the mildness of the symptoms. The meningitis resulted from the rupture of the orbital wall.

Dr. R. L. Randolph, Baltimore: In the paper I did not favor the enucleation of all cases promptly, but in that variety in which there is enormous engorgement of the surrounding tissues I make incisions in the anterior part of the ball. It is evident that there is not the same diversity of opinion among ophthalmologists here as there is abroad. At the same time I get the impression from my reading and from this discussion that there is a small element of danger, and it is still the safer procedure, perhaps, to make the incisions rather than take out the eye in the active stage. In Dr. Wood's case the foreign body entered the brain and that would be ruled out in this discussion, as the eye could not be considered as the source of the meningeal infection.

### **Transillumination.**

Dr. P. Fridenberg, New York, gives the results of an examination as regards transillumination of a large number of normal and diseased eyes in the Pathologic Laboratory of the New York Eye and Ear Infirmary and of experiments with globular artificial eyes filled with blood serum, fibrin and various colored fluids. Both the Sachs and Würdemann lamps were used throughout. The normal sclerae were found to be uniformly translucent, something like the web of the fingers when held up to bright light. Corneal opacities, no matter how dense or where situated, seem to melt away and give passage to a bright glow. Dense pannus of recent formation tends to obscure this reflex slightly, probably on account of the blood in the recently formed arteries. Deposits of uveal pigment on the cornea and elsewhere form an absolute barrier to light.

The lens, whether clear or opaque through oblique illumination, is absolutely transparent to transillumination, and cataract offers no obstacle to detection of any intraocular tumor or possibly of a foreign body. The normal iris is absolutely opaque without reference to its color. In some diseased states the pigment disappears and the light comes through. In many cases of atrophic iris, as in chronic glaucoma, there is marked reticulation with the appearance of cribiform or accessory pupils. Secondary membranes after cataract extraction obstruct the light only as they contain pigment or blood clot which completely arrest the light. Detached retina is absolutely transparent. Melanosarcoma, of course, casts a deep shadow. Unpigmented sarcoma, it is said, does not cast a shadow, but Fridenberg has been able to disprove this statement in at least one case. He attributes this to an irregular arrangement of the tissue elements. Glioma of the retina is always transparent, but any calcareous or bony change shows opaque. Transillumination gives no indication whatever of the circumlental space. He says in conclusion: "In addition to its well known uses for the detection of intraocular tumors and their differentiation from detachment and optically similar conditions, transillumination gives important information in many cases in which ophthalmoscopy is impossible, and oblique illumination alone teaches little. This applies particularly to conditions associated with dense opacity of the cornea, such as staphyloma, extensive leucoma and occluded pupil. In dense leucoma with adherent iris, the size and shape of the pupil and the extent of its mobility under a mydriatic can be determined accurately. The site of an optical iridectomy, or the advisability of tattooing a corneal leucoma, may be determined in the light of transillumination. This method may be combined with ophthalmoscopy for the examination of the ora serrata and neighboring ciliary region at present inaccessible on account of insufficient illumination due to the extreme angle of tilt which it is necessary to give to the ophthalmoscopic mirror. With the combined method the structures far forward are seen beautifully."

*Discussion.*—Dr. Edward Jackson, Denver: The statement that transillumination gives no indication whatever of the circumlental space is absolutely correct, and it is strange that such an idea ever gained credence. The principles of optics render this impossible. Experiment shows that when the source of the transillumination is back of the ciliary region no circumcorneal illumination

occurs, but only when the tip of the transilluminator is brought forward does this circumcorneal illumination appear on the opposite side. Narrowing of the circumferential ring in connection with glaucoma does occur, I believe. I have previously pointed out that this narrowing is associated with diminished depth of the extreme angle of the anterior chamber, and may also indicate sclerotic changes around Schlemm's canal or pigment deposits in this region.

Dr. R. D. Gibson, Youngstown, Ohio: I once extemporized a curved illuminator with the lamp bulb in the end. This point could be inserted through a wound and the entire interior of the eye illuminated. I described this at the Boston meeting and Dr. Würdemann, who followed me, presented his instrument, which is the same except that the lamp is located at a different place.

### Temporary Closing of Retinal Arteries.

Dr. Arnold A. Knapp, New York, says that disturbances of the retinal circulation causing loss of vision are very complex and still very imperfectly understood. Temporary obscurations of vision are not infrequent clinical manifestations of a disturbed retinal circulation and often precede permanent partial or complete blindness. He reviews briefly the principal literature of arterial spasm in the retina and reports five cases. He remarks that intermittent closing of healthy retinal arteries may occur without any lasting effect on vision, but with diseased retinal vessels the phenomenon is of grave significance, as it may cause permanent obstruction or thrombosis. If general retinal arteriosclerosis is present, a rigid general treatment should be given for this condition, mainly with a view of preventing any of the causes that may contribute to its recurrence.

*Abstract of Discussion.*—Dr. W. C. Posey, Philadelphia: In a paper on "Transient Monocular Blindness" which I read in 1902 I reported a series of cases similar to those of Dr. Knapp. He does not give the date of the work of Zehender whom he states was given credit by Ole Bull for being first to call attention to this condition. Loring, in 1874, made an extensive communication on transient blindness, although Graefe and others had reported isolated cases. Loring studied five cases with symptoms formerly attributed to embolism of the central artery, but he insisted that too much significance had been given to the stoppage formed by a

plug at a distance and not enough on the mechanism regulating the supply of blood within the eye, as well as to the condition of the vessels themselves and their contents. I pointed out that the prognosis should be guarded and cited a case of probable thrombosis of the central artery which had been the seat of fifteen or twenty attacks of transient blindness in eighteen months. An interesting case of monocular blindness was reported by Leber in which there were ophthalmic signs of embolus, which the microscope later failed to reveal. Leber attributed the blindness to spasm. The course, until vision was lost, was analogous to the cases of transient blindness.

Dr. E. C. Ellett, Memphis: Four of the cases reported in the paper are elderly people with gross vascular disease. Case 3 is a young person without vascular disease. These should, it would seem, be taken to represent different conditions, one functional, the other organic in nature. The commoner type is that seen in old people with arteriosclerosis, commonly attributed to embolism, and about whose nature much uncertainly exists. Complete recovery rarely follows these attacks, as indicated by ophthalmoscopic changes and visual disturbance. In a married woman, aged 35, who a year before had chlorotic anemia, with 65 per cent Hb and 5,200,000 reds, an examination after an attack of transient blindness showed the blood current in the arteries interrupted, with stretches of empty vessels alternating with full columns of blood, with edema of the retina and a cherry spot at the macula and slight fulness of the veins. Amyl nitrite with deep massage, and erythrol tetranitrate following, with mercury, restored the vision to 20-25 within three months. I have two other cases with hemiopia and other forms of visual obscurity as part of the picture of ophthalmic migraine, without headache, in which the cause is a matter of speculation. I have not examined them in an attack, but at other times the vision is normal.

Dr. L. Connor, Detroit: A man, aged 50, had, three or four months before, begun to lose his sight. Vision in one eye was 12-200 and in the other 8-200 for distance. His other functions, so far as experts could determine, were quite normal. I had previously demonstrated that with a vibratory apparatus I could reduce the size of the retinal artery. I passed the instrument around the sclerocorneal junction of each eye for a minute and repeated it, and within five minutes the patient could read 22-100 with one

eye and with the other 18-200. I looked into the eye and found the size of the artery perceptibly enlarged. Continued treatment brought progressive improvement until within a month the patient could read with his corrected glasses, previously obtained. Three years ago he could read 20-20 Jager 1 and carried on his business with entire success.

Dr. W. Zentmayer, Philadelphia: Five years ago I presented this subject before the section on the basis of one case which I had seen, of repeated attacks of transient, monocular blindness occurring over a period of two or three days, on one occasion affecting both eyes. He had as many as ten or fifteen attacks in an hour. Blood-pressure was normal and there was no evidence of arteriosclerosis. A paper of Dr. DeSchweinitz on the results of toxemia suggested this as the cause of my case, and the interesting fact in connection with the case that it was relieved in a few days by free purgation also suggests this etiology.

Dr. M. Feingold, New Orleans: Dr. Knapp makes a correct distinction between cases based on spasm and those based on embolism and thrombosis. But a sharp distinction cannot be drawn in the case of a man of 44 who visited my office. I had examined him and prescribed lenses a year before. He suddenly became blind in one eye while sitting at luncheon. Vision, which a year ago was 5-30 was now 5-12, and he could read only the right end of the line. The disk in the left eye was paler than that of the right, arteries visible, but possibly narrower, with veins well filled. The patient had arteriosclerosis. I recommended a free purge and the next morning he could see 5-30, the whole line. With continued purgation and sodium iodid vision returned to normal in four or five days. This is a borderline case not easily differentiated.

Dr. W. Reber, Philadelphia: I take it that thrombosis can take place without evidence of gross lesion, and we cannot today, except clinically, distinguish between spasm and thrombosis, but in those in which there is transient blindness with no thrombosis the evidence points to toxemia. It is a grave sign, especially in the presence of altered blood-pressure, and grave enough though the blood-pressure may be negative. The treatment is eliminative as in the cases cited.

Dr. W. Haughey, Battle Creek, reported a case of transient blindness in the right eye in a young man. He had 22-100 vision.



The retinal vessels were dilated and the heart action was extremely irregular. He was an excessive user of tobacco and coffee, which he discontinued and with strong eliminative treatment improved.

Dr. Allen Greenwood, Boston: These conditions are grave when they occur in connection with high arterial blood-pressure, and it has been my experience that it is raised in all these cases, even when under 40 years of age. In this day of high living we find arteriosclerosis in young persons, and the condition requires great care on the part of the ophthalmologist and also on the part of the family physician.

Dr. Arnold Knapp, New York: As far as I remember Ole Bull mentioned the fact referred to in 1857. He also mentions Raynaud's observations, so that the condition must have been familiar. None of these patients were hysterical (as suggested by Dr. J. L. Thompson). In fact, in hysteria the most important feature is the normal condition of the eye-ground. The exciting cause of the spasm is interesting, but is complex. I wish to emphasize prevention, because treatment after the condition has occurred is always unsatisfactory.

**The Effect of Bright Light on the Eyes.**—J. Herbert Parsons, F. R. C. S.

We are all cognizant of many pathologic conditions in which the harmful effects of bright light are manifest, such as snow-blindness, ophthalmia electrica, lightning cataract, glass-blower's cataract, etc. The term bright light comprises such various forces as heat, light in the narrower sense and chemical action. These are forces identical in character, being waves of varying length and rapidity of vibration, the longer wave lengths causing heat, those of shorter wave length to chemical action and those of intermediate length to light. Beyond the red end of the spectrum are rays which cause a rise of temperature, and beyond the violet end are rays capable of causing chemical action. So striking are the phenomena of the intermediate rays that the heat rays are called "infra-red" and the chemical rays the "ultra-violet." The spectra of various artificial lights show remarkable variety in the range of rays emitted. The aqueous medium of the eye acts like water and causes very little absorption of the visible or ultra-violet rays, and absorbs heat strongly, so that probably not much heat reaches the lens.

In some experiments made to determine the precise limits within which rays are absorbed by the refractive media, using young rabbits in all cases, the results were found to be as follows: The cornea offered no resistance to rays longer than 295 microns wave-length; the lens suspended in normal saline, showed that rays of wave-lengths less than 350 microns are absorbed completely, the absorption varying with the thickness of the lens layer: the vitreous in a layer 3-16 inch thick showed a broad absorption band extending from 280 to 250 microns, with a maximum at 270 microns. These results agree closely with those attained by Schanz, Stockhausen and Birsch-Hirschfeld. The shortest interval between the death of the animal and the taking of the observation was three minutes and the longest seven minutes. Schanz and Stockhausen examined the cornea and lens of a child from a case of glioma. The cornea absorbed up to nearly 300 microns and the lens about the same, whereas in a case of injury the corneal absorption was about the same but that of the lens was much greater. Hallauer recently found that the corneal and vitreous absorption in the eye of a man extended to 295 microns. He has examined a large number of cases and finds that the limits of absorption are dependent on age, modified by some other factors. From these investigations it is shown that the lens has a powerful capacity for absorbing ultra-violet rays. This is demonstrated by the strong fluorescence which occurs when these rays fall on it, and these rays may produce pathological changes in it. To prove this I exposed rabbits to Schott's uviole mercury lamp for long periods, and while changes could not be detected ophthalmoscopically, after hardening in Zenker and examining the anterior capsules microscopically, changes could be seen in the anterior capsule cells, agreeing with the findings of Hess. Changes similar to these observed were reported by Widmark with the arc lamp. It is most probable that the changes are due to ultra-violet rays of greater wave length than 300 microns and partly to rays of the visible spectrum. Schanz and Stockhausen attribute to bright light a preponderant rôle in the production of many pathologic changes, but in this I think they go too far. Glassblower's cataract, however, seems to be such a condition. In its typical form there is a dense, well defined disk of opacity in the center of the posterior cortex, and not infrequently slighter hazy opacities are seen around the posterior cortical disk. It seems to be unlike other forms of

cataract. The typical condition, however, was seen in only one out of five cases examined. These men while at work are continually looking into the furnace at the mass of glowing glass. But until further experiments have been made to eliminate the heat factor it would be unwise to make any dogmatic statement as to the true cause of these cataracts. Prolonged exposure of animals' eyes to light rich in ultra-violet rays produces intense congestion and inflammation of the conjunctiva, aggravated by repeated exposures, until finally the cornea is almost covered by the chemosed conjunctiva and swollen lids. The experimenter is not immune, and photographers using the mercury-vapor lamps also suffer. Complete protection is afforded by plain clear glass spectacles, which is known to cut off all ultra-violet rays of shorter wave length than 300 microns, and therefore the irritation must be caused by rays of shorter wave length. There is every reason to believe that snow blindness and sunburn are due to the same cause. Birch-Hirschfeld found that light rich in ultra-violet rays produces changes in the retina so that minor defects in the color field are produced. The red vision experienced after exposure to bright light in persons who have been operated on for cataract has been attributed to the ultra-violet rays, though this is not determined certainly. Protection of the eyes from these rays is therefore indicated, and efforts have been made to produce a glass which would without interfering with its transparency to ordinary light, absorb all these rays, such as the quartz glass of Schott called uviol, but which falls below quartz in this respect. Many other kinds of glass have been made for this purpose and experiments made, but as yet without complete success, as much of the transparency to ordinary light is lost in the effort to shut out these ultra-violet rays.

### Visual Acuity.

Dr. E. Jackson, Denver, says that in testing visual acuity we need only to determine a single "*minimum separabile*," which is best done by finding the greatest distance at which a test of known visibility can be recognized. In subjective measurement of ametropia we have to provide for a "*minimum separabile*" progressively diminishing as the accurate correction of the refractive error is more nearly approximated. This requires a series of test objects gradually diminishing in size as in the ordinary test cards. The adoption last year at the Naples Ophthalmologic Congress of an

international standard, fixing normal visual acuity as the ability to recognize two points separated by an angle of one minute, and the test of this ability of the so-called broken ring, a black circle on a white ground, the black line having a width one-fifth its outside diameter and the break in the ring having just its width, is, he thinks, an improvement over his own suggestion of using a black square with a similar opening, since it allows a greater number of angles in which the test can be made. This test is extremely convenient in examining patients, as it can be carried on a card in the pocket. For testing school children or men in certain occupations a series of broken rings may be used. For the subjective measurement of ametropia by trials of lenses a very different test card is necessary and letters or numerals are superior to any other test objects. The letters, of course, are unequally visible and certain ones have to be employed to meet this difficulty, but even they leave a certain inequality. This, however, may be of distinctive advantage in measuring refraction. It is only as a test for visual acuity that it becomes a disadvantage. Wherever such objects are used to test visual acuity it is necessary to compare their visibility with that of the international standard broken ring, and this should be done by every ophthalmologist with the test cards he habitually uses. By making such a comparison and numbering the different lines in accordance with it on our ordinary test charts, we can come to a certain uniformity. If there is a considerable variety of letters in one line it must be understood that to recognize one or two letters on it means one visual acuity and to recognize all means a higher visual acuity. It would be of practical value to note on one end of the line what vision is required to recognize two letters and what to recognize all. It is well to ask the patient to name the letters instead of merely saying what change of distance makes his vision better or worse. When once clearly recognized, test letters lose their value, especially when the best vision has been reached and slight changes are yet to be made, as the patient's memory of them will be liable to cause misleading answers. He illustrates a card which he has had prepared containing only the smaller rows of letters for use in the accurate subjective testing of refraction with figures at the end of the lines indicating the degrees of acuteness, according to the international standard, required for their recognition and the distance at which they subtend the angle of five minutes.

## ABSTRACT OF DISCUSSION.

Dr. C. H. Williams, Boston: If a doctor had an unlimited amount of time and patience and the patient had more accurate powers of observation and ability to describe what he saw, it might be possible to use both tests described by Dr. Jackson and get satisfactory results. Ten years ago Landolt sent me some of his test types, but I found the time consumed was greater than with the Snellen letters and the statements of the patients were often so uncertain that the results were unsatisfactory. The principle of the minimum separabile was first proposed by Hook over 200 years ago, who found that the minimum distance at which persons could distinguish two stars was one minute, and Donders refers to this as the first appreciation of this physiologic question, but says in eye troubles the method is not applicable, as the person must give absolute proof that he distinguishes. Snellen's test types have been satisfactory for 4 years, but it is possible to improve them, as has been done by John Green, who proposed a regular gradation in geometrical progression, and it seems to me they can be used for all purposes better than any other test yet devised. With the broken ring there is trouble with irradiation at the gap. Memorizing the letters can be easily overcome by using cards with one size letters on each card, each size in triplicate, with a different set of letters on each card. In addition to the test types for distant vision we need a more accurate series of printed matter for the reading test. Few reading tests equal the Shrift-Scalen of Jaeger, published in 1854, which was followed by the American Ophthalmic Society in its standard in which  $L-d D$ , in which  $L$  represents the reading power,  $d$  the distance in decimeters at which the print is read and  $D$  the distance at which the lower case letters subtend the visual angle of five minutes.

Dr. F. Park Lewis, Buffalo: I wish to illustrate a method of determining at the same time the acuity of vision and refraction, founded on the broken ring test. It consists of a broken ring which by rotation may be made a complete ring. One of the chief difficulties in testing or estimating ametopia is the inability to indicate the direction of the symbol when the broken ring is used. The device I wish to describe is a white ring with an intercepted segment on a black background. The opening may be turned in any direction and is closed by rotating it over a white band of the same size which is placed under it, so that by closing the ring,

accomplished by the patient, the acuity of vision is determined. One ring each of ten sizes is sufficient and by rotation an indefinite number of directions may be secured and an absolute determination made. By an arrangement of test colors on the ring it may also be used for testing color-blindness.

Dr. W. H. Lucette, St. Louis: For use outside the office a device used at the clinic of Landolt answers well. It is made of two cards, made to turn on each other, with an open space in one which may be turned to expose rings of different sizes. If the patient recognizes one, without changing the distance, the disc can be changed and thus one size after another is disposed of until vision is determined.

Dr. Edward Jackson, Denver: It is not proposed that this shall supersede our card of Snellen test letters, but without departing from the Snellen standard we can adopt a card which is very much more accurate than any card of test letters. No set of letters meets all the requirements of a standard, whether each letter subtends an angle of five degrees or not. They do not constitute an exact test, and an exact science like ophthalmology should adopt an exact test. Familiarity renders the test letters unreliable when comparing those who read much with those who do not. The international standard was an important advance. The broken ring has also a distinct superiority in requiring the persons tested to give positive evidence that they do see, and it may be used in persons who are unable to read, and in young children who may point with the hand. You can test with perfect accuracy a person in any position where you can get a good light on the card.

THE END.

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WILLS HOSPITAL OPHTHALMIC SOCIETY, APRIL 5, 1910.

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WILLIAM CAMPBELL POSEY, M. D., Chairman.

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Dr. Zentmayer exhibited a case of tubercular keratitis in a young girl. The progress of the disease had been checked and was rapidly going on to a cure by injections of tuberculin.

The Chairman referred to the growing conviction that tubercular keratitis is much more common than was formerly held, and to the prevalent view that many cases of interstitial keratitis which

were formerly regarded as of syphilitic origin, were really tubercular. He agreed with Dr. Zentmayer that small doses of tuberculin are to be preferred to the large ones for diagnostic purposes and mentioned a case of suppurative mastoiditis which had seemed to follow the subcutaneous use of 1 mg. of tuberculin, in a negro the subject of a supposed tubercular iritis. The clinical features of tubercular keratitis were dwelt upon and several cases of scleritis of tubercular origin were referred to.

Dr. Schwenk exhibited a case of double conical cornea in a young man, a hard worker who came for advice because his sight failed one year ago. Several members of his family have bad sight, but none with symptoms like his. The cones point down and in. With  $-1+8$ . ax.  $5^{\circ}=6/12$ : L.  $-1+5$ . ax.  $1.75^{\circ}=6/12$ . Most cases of keratoconus require a higher plus than this. If the sight warrants use of these glasses Dr. Schwenk will not operate, but if there be much change in six months he will then cauterize the apex of the cone and tap the cornea at right angles to the higher curve.

The Chairman spoke of the etiology of conical cornea, and said that there was no evidence to refer the condition to any precedent systemic dyscrasia, as many subjects of conical cornea had always had the best of health. Tweedy's theory of a structural weakness in the substantia propria of the cornea as a consequence of insufficiency of the mesoblast during the embryonal life of the eye was interesting but had not been established.

Dr. Zentmayer showed a boy on whom he had performed an advancement of the external rectus without tenotomy of the internus for a squint of about  $25^{\circ}$  securing parallelism of the visual apex. The case was, in his judgment, particularly suited for this method of treatment as the H. was of a very low degree. He was always fearful of combining a tenotomy with the advancement lest the tenotomized muscle should attach itself so far back on the globe that it could exert but little action in turning the eye. He had never regretted performing an advancement but formerly when he had performed tenotomies he had frequently had cause for regret.

The chairman said that he thought that Dr. Zentmayer had overestimated the disadvantages of simple tenotomy, as well as the combining of tenotomy with advancement. For his part, he rarely did an advancement without tenotomy of the antagonist. In cases

of congenital squint, a simple advancement might often suffice, but concomitant squint demanded a tenotomy as well.

Dr. Posey showed a case of pronounced palpillitis in a young man, a worker in rectified spirits. Unless the ocular inflammation is of a toxic origin, he is at a loss to account for its etiology, as the man is in otherwise perfect health; syphilis was denied, and there are no brain symptoms. A superficial examination of the sinuses had shown these to be normal. A tuberculin test was to be essayed, and the sinuses studied more carefully.

Dr. Risley said he was inclined to the opinion, from only a very cursory study, however, of this patient that sinus disease as an etiological factor in cases of monocular neuritis, should be excluded only after the most careful study by all known methods. In this instance the nasal septum is deflected toward the affected side and the anterior segment of the skull is irregular in form, conditions often associated with sinus disease. The ophthalmoscopic picture did not suggest intracranial pressure and he thought the man's excellent general health excluded alcohol as a probable cause.

Dr. Edward A. Shumway (by invitation) said he regretted that he had not been present to hear Dr. Posey's remarks, but, as in all cases of monocular optic neuritis, he thought that the likelihood of there being a choroiditis in the immediate neighborhood of the nerve, with secondary involvement of the latter, should be borne in mind. As to the etiology, he believed with Dr. Risley, that careful examination should be made of the accessory sinuses as well as tests with tuberculin.

Dr. Harold Goldberg reported the examination of a globe about which he could not obtain the clinical history, but the sections of which showed that the lens had been dislocated and had become encysted beneath corneal and episcleral tissues. The lens, of perfect form, but cataractous, was enclosed within a fibrous sheath composed of the cornea and a portion of the sclera, together with organized inflammatory products. It is deeply to be regretted that the specimen had not been labeled, for the records might have thrown some light upon so strange a pathologic occurrence.

Dr. William Zentmayer, in speaking of the Clinical Diagnosis of Trachoma, said that the differential diagnosis tabulated in parallel columns as given in the text books, served to distinguish typical cases of the disease under consideration but left a large



number of border line cases in which a difference of opinion might occur among experienced ophthalmologists. Collins states that the earliest symptom of the disease is the appearance of gray avascular spots rather smaller than a pin's head in the tarsal conjunctiva of the upper lid. Their presence might be obscured when there was a co-existing catarrh, and acute symptoms are usually the result of intercurrent affections. Wootten gives as the initial symptoms an injection of both the ocular and tarsal conjunctiva. Slight ptosis and keratitis often appear early. No follicles are discoverable for two to three weeks, the conjunctiva appearing simply hypertrophic; this diminishes and the follicles are then seen. These are at first few in number and as a rule situated in the conjunctiva of the lower lid. He states that a subacute conjunctivitis which involves one eye for a period of two weeks, if not due to lachrymal obstruction, is almost certainly trachoma. Follicles without hypertrophy of the conjunctiva constitutes the non-progressive type of follicular conjunctivitis. In true trachoma the hypertrophied conjunctiva becomes fleshy through the engorgement and vascularity of its papillae consisting in red raspberry-like elevations which mask more or less the characteristic gelatinous granulations. This may become so excessive that the membrane is thrown into folds and may present excrecences. The disease is now at its height and according as to whether the follicular enlargements or the papillary enlargements predominate, so is the type designated. Ptosis becomes quite marked at this period and corneal complications are of frequent occurrence. With the absorption of the granules, the conjunctiva becomes uniformly red and velvety and later takes on an infiltrated gelatinous appearance. The inflammation begins now to subside and there follows the stage of cicatrization. Islands of granulation become surrounded by a network of fine lines of connective tissue. This in time gives place to a smooth conjunctiva seamed by white, shining cicatricial lines. As sequels we have entropion, trichiasis, ptosis, etc. The important question is—Is it possible to tell whether follicular enlargements present in the conjunctiva are benign or that they are the incipient stage of trachoma?

Stephenson gives the following contrasts for the differentiation of follicular or false granules from true granules. The first are oval or rounded transparent bodies the diameter of which seldom

or never exceed 1 or 1.5 mm. They often possess a faint yellowish hue and are usually arranged in rows. Their tendency is to remain discrete. They are always larger in the inferior fornix. The second are round, opaque, ill-defined bodies of grayish white color and of extreme friability. They are firmly and deeply imbedded in the conjunctiva, their diameter often reaching 2 mm or more in size. They tend to become confluent, forming areas of trachomatous material. They are always larger and more numerous in the upper fornix. The results of the investigations of the past year into the question of the diagnostic value of the Prowazek "trachoma bodies" would indicate that we have in them an answer to this important question. These bodies are smaller than the smallest cocci and are found for the most part massed together in pairs or clusters near the cell nucleus, in the form of a cap, only separated from the nucleus by a narrow clear margin. The space containing the granules enlarges rapidly, causing the cells to swell and burst. They are found most frequently in the epithelium, but also in the adenoid tissue. They are stained by the Giemsa stain. The diagnosis between vernal conjunctivitis and trachoma is usually quite easy to make, but occasionally, we meet with cases of vernal conjunctivitis in which there are large cartilaginous elevations in the conjunctiva of the upper lid having a tessellated appearance, giving them a sufficiently close resemblance to trachoma as to confuse those who are without special training, as are some who officially pass on these cases. The history of the case, the intense itching, the stringy nature of the scant discharge, the sharp demarcation of the elevation and the milky, bluish-white film which covers the conjunctiva should serve to differentiate the two. Morax states that the finding of eosinophiles is diagnostic of vernal conjunctivitis as they are found in but two other conditions—trypanosoma and miasis. In rare instances Parinaud's conjunctivitis has been mistaken for trachoma, as in this disease also we have enlarged lymph follicles, but these are enormous in size, pedunculated and polypoid and spring from the conjunctiva of the fornices, tarsi or even from that of the ball. They usually present ulcerated areas. The lymphatics including the parotid gland are enlarged and frequently undergo suppuration. In the cicatricial stage the only affection with which it might be confounded is pemphigus. But here the nature of the bands which bridge over from the lid to the

ball and the obliteration of the cul-de-sac which follows, together with the presence of bullae or scars on the face or on other mucous membranes should decide the diagnosis.

Dr. Clarence P. Franklin (by invitation) in speaking of the Status of Trachoma in Philadelphia, reviewed the Acts of 1905 and 1909, and said that nothing further than the reporting of cases to the health authorities was required by law, yet the regulations of the Bureau of Health require the removal of the infected child from school until the city ophthalmologist grants permission for a re-entry. This officer also gives advice to parents and guardians as well as to adult cases, as to necessary hygienic conditions and for the prevention of the spread of the contagion. The Trachoma ward at the Philadelphia General Hospital is the only public facility in the city for the care of cases. Although there are thirty assistant medical inspectors in the city, only a few of them are experienced in the diagnosing of trachoma. In 1908, forty-two cases were reported, and in 1909 there were sixty-one cases. No trachoma cases are admitted to any of the general hospitals of the city. Dr. Franklin then outlined the work of the trachoma committee of the State Medical Society, and stated that the Bureau of Municipal Research had arranged for the establishing of a trachoma commission for the investigation of the disease and the probable number of cases existing in city. Investigations are to be begun with parochial schools, then public schools, and then are to be extended to institutions. He advocated the methods for the carrying out of the plans of the trachoma committee, and urged that a more thorough investigation should be made of trachoma "nests" when found, and, lastly he forecasted the establishment, by the State, of trachoma hospitals, or trachoma homes, for the care of, and final eradication of trachoma from Pennsylvania.

Dr. Highland Dewey, in discussing the subject of the legalized inspection of school children's eyes for the detection and regulation of trachoma, said he believes this problem to be a social question as well as a medical one, and that it is time to call a halt to some of the public procedures. He does not believe we have a right, neither does he regard it to be necessary to go into a school and turn the lids of every child; he would have us respect the rights of the individual. A trachoma which can be detected only by such pro-

cedure is practically without secretion and the danger of infection from such a case is infinitesimal.

Trachoma in the city of Philadelphia is fast diminishing. At the Wills Hospital in the year 1872, out of a total of 2,876 there were 161 cases of trachoma; in 1908, out of a clinic of 18,426 there were only 131 cases. Of the cases in 1872, 5.9% were trachoma, in 1877 there were 4.9%, in 1884 there were 2.2%, in 1893 there were 1.2%, in 1900 there were 0.9%, and in 1908 there were 0.7%.

Excepting the Negro race, trachoma is more likely to be found in people of strong racial characteristics, as the Semitic race and the Malays, and next to this in strongly marked nations, as the Celtic, French, German, Italian, and rarely is it found among people of mixed blood. This of itself is a strong factor in keeping the number of cases in America within limits.

The damage done to vision has been exaggerated. In a study of 8,968 cases in Dr. Zentmayer's Clinic, from 1902 to 1909, and of nearly 15,000 cases in Dr. Norris' Clinic from 1890 to 1902, there were 454 cases of trachoma, and as he remembers, the average vision in the better eye was 5/15 and of its more unfortunate fellow 5/35. This was without the correction of the refractive errors, many of which were of a high degree.

The danger of contagion can not be great. He has charge of an orphanage of over 200 children in which for years there have been only three cases of trachoma, and none of the other children have become infected. In the clinic with which he is connected, a woman with trachoma since childhood has raised a family of seven children, without any of them having the disease, and how often we see a person with monocular trachoma without the other eye ever becoming affected.

Dr. Schwenk believes that many cases of so-called conjunctivitis, if left untreated, would develop into trachoma. The period of incubation of the trachoma bodies is fourteen days. One can readily see that emigrants landing on our shores may pass the ship inspection, yet they may be the bearers of the germs of trachoma, which may develop a few days after leaving the ship. The differential diagnosis between follicular conjunctivitis and trachoma rests very largely upon the duration of the symptoms, as follicular conjunctivitis yields to treatment within two weeks while trachoma does not. If a case of acute trachoma is treated early it will get

well in a short time, but will recur from time to time if not thoroughly treated. The environment aids much in its propagation. There has been established at the Pennsylvania Hospital, a social department to which these cases are now referred. The lady in charge visits the homes of the patients and reports back to the clinics just what conditions exist there.

Dr. Shumway said that at the Philadelphia General Hospital they had been able to treat the trachoma cases much more satisfactorily since the establishment of the trachoma wards. The patients were kept as long as they were willing to remain, or until acute symptoms had subsided, and redundant tissue had been removed, and faulty lid positions corrected by operation, or until there did not seem to be any further danger from contagion. Many of the worst cases came from the foreign population in the coal mining regions of Pennsylvania. Formerly many were sent from the ships arriving in Philadelphia, with foreign immigrants, but now the steamship companies are more careful. Several years ago, a number from one of the orphan asylums, were sent by the city ophthalmologist. In view of the large number of cases discovered in New York, and the comparatively few reported in Philadelphia, he did not agree with Dr. Dewey, but thought the committee's work in inspecting the parochial and public schools a very important one.

Dr. Zentmayer said that the statistics given by Dr. Dewey, showing a reduction from 5.5% to .6% from 1870 to 1910 were all the more striking when we take into account the fact that within this period the class of patients attending the clinic had undergone a marked change and that at the present time the majority of those in attendance are from the races and the class in society in which trachoma flourishes. He further said that in his experience in a reformatory of over 700 boys cases of trachoma were of rare occurrence and he had never seen a spread of the disease in the school.

Dr. Wessels, the ophthalmologist of the Bureau of Health, in response to an invitation to speak upon this subject, said that he heartily concurred in the proposition that a commission be appointed to go through the city schools for the purpose of detecting cases of trachoma, for he believes with Dr. Franklin, that there are more cases in the schools than have been reported, yet he does not

believe that the number in the public schools is so great nor the type of the disease so virulent as Dr. Franklin presents. Trachoma is a serious disease, and in some countries, produced 60% of all cases of blindness. Virulent types do not seem to obtain in our public schools, for surely, if they existed they would be noted and our dispensaries would be over-run with them; the cornea would have become involved and the vision be greatly diminished, if not lost. If there were such "nests" of trachoma in our public schools some indelible imprint of the effects of the disease should remain to show it. The fact is, the type of trachoma in our public schools is so mild that an expert is required to detect it. If a case of trachoma is so mild that it shows no external evidence, Wessels agrees with Dr. Dewey, that there is little or no danger in permitting such children to remain in school. If such cases of trachoma were very contagious there surely would be some children whose vulnerable lymphatic tissues would make them susceptible to an acute attack of the disease, yet acute trachoma is exceedingly rare in the public schools. He has seen, however, many cases in institutions not under medical inspection; indeed, in some of these institutions, eyes have been lost and the disease allowed to spread, whereas such epidemics would have been prevented, had the first case been reported and isolated. The number of cases of trachoma reported by physicians and hospitals is very small, which shows that the total number in the city must be either small or that physicians and hospitals are not reporting their cases. The majority of the cases reported as from the schools have been already reported and were referred to the dispensaries of hospitals for treatment. And again, the same case may have been reported from two or more hospitals. As the Bureau of Health keeps a permanent record of all cases, such reportings are counted as but one case, although two or more hospitals may have a record of the same case. The statistics of the hospitals therefore would indicate two or more duplications of a simple case; a very frequent occurrence. A case of trachoma coming for treatment from outside of the city should not be credited to Philadelphia.

The course adopted by the Bureau of Health for the control of cases in the public schools, has been to examine the child as soon as it is reported, when it is either excluded from school or placed under treatment and constant observation according to the severity

of the case. If the disease is of an acute type or if there be any discharge from the eye it is recommended that the child be sent to the special ward provided for such cases at the Philadelphia General Hospital. If the type be mild without discharge the child is advised to go to a dispensary, yet he is kept under the constant observation of the medical inspector and nurse. At the first sign of an exacerbation the child is excluded from school. Such a course as this enables the children to have the benefits of education while the rest of the children are protected. Of course, there must be no interchange with the school mates of articles used by the trachomatous child. Not only the trachomatous, but all doubtful cases of disease of the eyes are treated in this manner. A permanent record should be kept of every case of trachoma in the city, and every person with the disease allowed to remain in the schools should be under constant observation. This would work no hardship, for while they are under observation they would have the advantage of schooling, and yet the other children could be protected.

Dr. Franklin said that he believes there are "nests" in this city, and he cited the case of a boy whose coming from a day nursery led to an investigation and sixteen cases were found. The Bureau of Health is sympathetic, helpful, and desires to help and be helped. The rules are now being revised. No state-aid is given except for cities of the first class. The management of institutional cases, such as Dewey's, would be easy to maintain.

Dr. Posey said that as chairman of the meeting he had requested Dr. Franklin to prepare a statement in order that the members of the society might know just what the present status of the trachoma question in Philadelphia was. He said that the city through its ophthalmologist had done what it could to follow up the cases which had been reported, and by its creation of a trachoma ward at the Philadelphia General Hospital had prepared a proper place where all trachoma cases might be sent.

He dwelt, however, upon the desirability of having a special trachoma hospital school, in which children might not only be treated for their ocular disease, but might receive instruction in primary educational subjects. The care of adult trachoma patients during the acute attack, and later while their eyes still render them a menace to the community, was a difficult social question

to answer but should be met by the creation of a trachoma hospital, and, after the discharge of the patient, by the propagation of instruction through social helpers to the patients as to how they might best prevent their disease from being communicated to others. He believed the trachoma commission which was presently to begin work, would undoubtedly arrive at a proper index of the comparative frequency of trachoma in the Philadelphia public and parochial schools. Two ophthalmologists would examine a school and would study all questionable cases in common, so that the diagnosis of trachoma in all doubtful cases would not rest upon the judgment of only one man. A series of cases from the wards of the hospital was then exhibited to demonstrate some of the stages of trachoma.

BURTON CHANCE, Secretary.

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### News Items

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*Personals and Items of Interest should be sent to Dr. Frank Brawley, 72 Madison street, Chicago.*

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Dr. and Mrs. David Fiske of Chicago have returned from a summer in Europe.

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Dr. W. Stock has been appointed to succeed Prof. A. Wagenmann of Jena.

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Dr. Victor Morax of Paris has been made Chevalier d la Legion d'Honneur.

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Dr. Ferdinand Plehn, formerly of Paris, died recently at Steglitz.

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The engagement of Dr. Wm. Campbell Posey of Philadelphia to Miss Hadassah Hamilton Felton of Chicago has been announced.

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The title of Professor has been conferred upon Dr. Herzog and Dr. Napp of Berlin and Dr. Wessely of Wurzburg.



Dr. Felix La Grange has been appointed Professor of Clinical Ophthalmology in the University of Bordeaux, to succeed Dr. Badal.

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Dr. Marc Dufour, professor of ophthalmology in the University of Lausanne, Switzerland, died suddenly in that city on July 29 last.

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Prof. Dr. Hermann Kuhnt, professor of ophthalmology in the University of Bonn, has received the order of the Prussian Red Eagle of the third class, with clasp.

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Prof. Wm. Uthoff, professor of ophthalmology and director of the eye clinic in Breslau, has been appointed Dean of the Medical Faculty of the University of Breslau.

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Surgeon-Major F. Kinealy, who was house surgeon at the Royal Westminster Ophthalmic Hospital, is now on the staff of the Viceroy of India.

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The Ohio State Board of Health has begun an active campaign for prophylaxis against ophthalmia neonatorum. Every registered physician in the state received a sterilized dropper and a quantity of silver nitrate solution.

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In accordance with the movement to care for the eyes of school children, the following instructions have been compiled in New York City and each child will have a copy pasted in his school book:

"Never read in bad light. Always hold your head up when you read. Your eyes are worth more than any book to you. Hold your book about fourteen inches from your face. Let the light come from behind or over your left shoulder. Your safety and success depend on your eyes; take care of them. Rest your eyes by looking away from the book every few moments. Avoid books or papers printed indistinctly or in small type. Never read with the sun shining directly on the book. Wash your eyes night and morning with pure water. Be sure that the light is clear and good. Never face the light in reading."

## CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.-G.) J. F. Burkholder (E. E. N. T.)	G. W. Mahoney (Poli.) Geo. F. Suker (P.-G.) Oliver Tydings (E. E. N. T.) C. H. Francis (Poli.)	E. J. Brown (E. E. N. T.)	G. W. Mahoney (Poli.) Richard S. Pattillo (P.-G.) J. F. Burkholder (E. E. N. T.)	Richard S. Pattillo (P.-G.) Oliver Tydings (E. E. N. T.)	G. W. Mahoney (Poli.) E. J. Brown (E. E. N. T.) C. H. Francis (Poli.)
10 A.M.	L. J. Hughes (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	E. J. Brown (E. E. N. T.)	L. J. Hughes (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)
	Brown F. usey, N.W.U. Every day, 10-12 A.M.					
11 A.M.	H. W. Woodruff (E. E. N. T.)	A. G. Wippert (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	A. G. Wippert (E. E. N. T.)	H. W. Woodruff (E. E. N. T.)	A. G. Wippert (E. E. N. T.)
1 P.M.		Willis O. Nance (C.C.S.)		Willis O. Nance (C.C.S.)		Willis O. Nance (C.C.S.)
2 P.M.	E. V. L. Brown (Inf.) E. J. Gardner (E. E. N. T.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) N. E. Remmen (Inf.) J. B. Loring (Inf.) F. A. Phillips (Inf.) Wm. H. Wilder (Inf.) H. B. Williams (Inf.) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) Thos. Faith (E. E. N. T.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) F. A. Phillips (Inf.) Wm. H. Wilder (Inf.) H. B. Williams (Inf.) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)	E. V. L. Brown (Inf.) W. A. Fisher (E. E. N. T.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) N. E. Remmen (Inf.) H. W. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) Oscar Dodd (Inf.) M. H. Worthington (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) Thos. Faith (E. E. N. T.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) E. J. Gardner (E. E. N. T.) Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruff (St. Luke's) J. B. Loring (Inf.) A. Payne (Ills. Med.) F. A. Phillips (Inf.) Wm. H. Wilder (Inf.) H. B. Williams (Inf.) Francis Lane (Rush) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)	E. V. L. Brown (Inf.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) Wm. H. Wilder (Rush) H. W. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) Oscar Dodd (Inf.) Thos. Faith (E. E. N. T.) M. H. Worthington (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (E. E. N. T.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) F. A. Phillips (Inf.) Wm. H. Wilder (Inf.) M. H. Lebensohn (P. & S.) S. L. McCreight (C.C.S.)
3 P.M.	W. Allen Barr (C.C.S.) *Wm. E. Gamble (P. & S.)	H. H. Brown (Ills. Med.) W. Allen Barr (C.C.S.) *Wm. E. Gamble (P. & S.)	J. E. Harper (P. & S.) W. Allen Barr (C.C.S.) *Wm. E. Gamble (P. & S.)		W. Allen Barr (C.C.S.)	Geo. F. Suker (P.-G.)
4 P.M.	W. F. Coleman (P.-G.)	C. W. Hawley (P.-G.)	G. F. Suker (P.-G.)	C. W. Hawley (P.-G.)	W. F. Coleman (P.-G.) Brown F. usey (County)	

\*Special operative eye clinics.

## ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 819 W. Harrison Street.	County: Cook County Hospital, W. Harrison and Honore Streets.	Poli.: Chicago Policlinic and Hospi- tal, 174 E. Chicago Avenue.	Rush: Rush Medical College, W. Harrison and Wood Streets.
E. E. N. T.: Chicago Eye, Ear, Nose and Throat College, Washington and Franklin Streets. Clinics all day.	Ills. Med.: Illinois Medical College, 182 Washington Blvd.	P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.	St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.
	Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.	N. W. U.: Northwestern University, 2431 Dearborn Street.	

# THE OPHTHALMIC RECORD

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## SPOROTRICHOSIS OF THE EYE-BALL AND EYE-LIDS.

By H. GIFFORD, M. D.,

OMAHA, NEB.

Illustrated.

Although since Schenck <sup>(1)</sup> of Johns Hopkins first described the disease in 1898, some 70 to 80 cases of sporotrichosis have been reported; it has been known to attack the skin of the lids, or the conjunctiva, in but six cases, and the case which I have to report is the first in which the ocular conjunctiva has been the seat of the affection.

In Schenck's original case the disease showed itself as a torpid ulceration of the finger with inflammation along the lymphatics leading up the arm, and swelling and suppuration of the lymph-nodes; the abscesses healing slowly, being accompanied by the formation of granulation tissue. In the pus, Schenck discovered a germ which he considered to be related to the sporotrichum, a genus of the lower fungi previously known only to botanists. Brayton <sup>(2)</sup> in 1899, and Hektoen and Perkins <sup>(3)</sup> in 1900, described similar cases, though that of Brayton was not proved mycologically; while in 1903, the first extra-American case was described by de Beurmann and Ramond <sup>(4)</sup>, and from that time some 15 cases have been reported, chiefly from France; a few from South America, and within the last year only, a few from Germany. The disease occurs in a variety of forms, but in the most common one, tuberculo-syphiloid looking nodules form in or beneath the skin, become red or purple as they increase in size; the skin over them gets thin and the granulations break through and slow ulcers form, from between the granulations of which a little pus can be squeezed. Along the line of the lymph channels small abscesses and fistulae lined with granulations not infrequently develop. Besides the skin, the mucous membranes, lungs, muscles, bones, and tendons have been affected. Dor has reported a single case in which rather large abscesses developed. General sepsis occurs rarely. Pathologically,

the granulation tissue formed has some characteristics of both tuberculosis and syphilis. Potassium iodide in doses of 2-4 grams daily seems to be a specific for the disease.

The germ of sporotrichosis can only exceptionally be found by a direct examination of the pus, but on maltose—glucose—or glycerinagar, on some blood serums, and the greatest variety of vegetables it grows readily at room temperatures, while at 37 degrees C. some races grow readily and others only sparingly or not at



FIG. 1.—Sporotrichosis of the Ocular Conjunctiva. The White Spots Are Due to Light Reflected from the More Prominent Nodules, Both at the Outer and at the Inner Sides of the Cornea.

all. As described by Schenck the germ grows rapidly at 37 degrees C. as small white colonies, which become whiter as they increase in thickness. They rapidly assume the appearance of a small chain of mountains, the center of each colony rising like a peak from the surface; later they become brownish or black and cover the whole surface of the culture medium. The microscope shows a fine irregular

mycelium, more or less encased or covered along the sides and points with large spores, roundish or more generally somewhat oval, from 3-5 micrones in length; these are apt to occur in somewhat concentric groups at the terminations of the mycelial threads. They stain readily with the ordinary agents and generally retain the color by Gram's method. De Beurmann described a new species of sporothrix, which has been the one observed almost exclusively since then. He based his distinction on the fact that while Schenck's germ grew

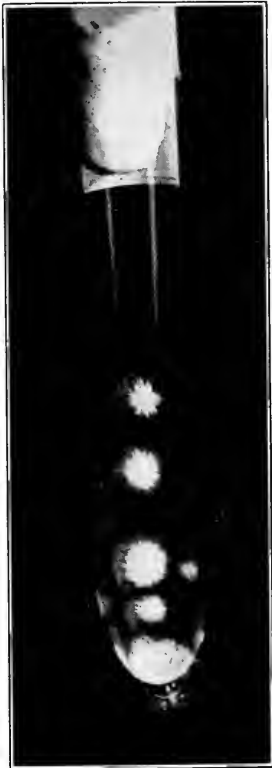


FIG. 2.—Culture of Sporotrichosis on Lactose Agar, 14 Days Old at Room Temperature; From Case 1.



FIG. 3.—Culture of Sporotrichosis on Glucose Agar, 14 Days Old at Room Temperature; from Case 1.

rapidly at 37 degrees C., and became brown on the fifth or sixth day, his germ showed no colonies till the fifth or sixth day, did much better at room temperatures than in the oven, and showed no tendency to get brown till the twentieth day, when the colonies became brown in the center and powdery white at the periphery. More

recently, however, according to Pinoy of the Pasteur institute (cited by Morax) (<sup>5</sup>), it has become evident that these differences are inconstant: some races of de Beurmann's germ grow well at 37 degrees C., while others do not. The real differences, according to Pinoy, are that Schenck's germ produces comparatively few spores, and the mycelial threads tend to run in parallel lines, while de Beurmann's germ produces the greatest profusion of spores, and the mycelial threads form a mesh-work. According to Gougerot, the Schenck germ ferments lactose while de Beurmann's does not. Pinoy also states that the Schenck colonies, on carrot, remain white, while de Beurmann's become rapidly dark: statements so much at variance with the original descriptions of Schenck and de Beurmann that it is evident that the last word as to the differences between these species, if any really exist, still remains to be spoken.\* Morax in his first paper (<sup>6</sup>) describes a third species, that of Dor: the colonies of which remain white, grow sparingly and soon die out: but in his later paper he says nothing of this species, covered in the United States and refer only to de Beurmann's discovery.

The sporothrix is evidently only incidentally pathogenic. De Beurmann and Gougerot have found it growing on various plants, and at times it seems to lead a harmless, saprophytic life in the buccal cavity. In the common lower animals it is only moderately pathogenic except in the case of mice, which are rapidly killed by it.

The first case in which sporotrichosis appeared in the domain of the ophthalmologist was that of Danlos and Blanc. (<sup>7</sup>) Their patient was a man of 63, who, for 4 months, had had a granulating ulcer at the outer extremity of the left lower lid. When seen by them this had a diameter of 1½ cm., covered with granulations, redder and firmer than those generally found in tuberculous ulcers. A little pus exuded from several points: outer ¼ of conjunctiva somewhat red and oedematous. Cultures showed the sporotrichum of de Beurmann with the yellow pus coccus.

Besides this case, Morax and Carlotti mention the doubtful one of Greco in which a man had a sty followed by a somewhat obstinate ulceration. A year and a half later he developed sporotrichosis of one foot, and Greco, without having any proof, suggested that the lid lesion was probably the primary lesion. Morax and Carlotti (loc. cit.) then reported the following case: Man of 50 years, lesion of eye-lid for several weeks. Morax and Carlotti found the whole left upper lid and the skin for some mm. above the eye-brow reddened

and swollen, with a curved line of small, somewhat yellowish elevations running from below the internal end of the eye-brow to the outer commissure. These turned out to be small intra or subcutaneous abscesses; besides this there were a number of shallow ulcerations of the free border of the eye-lid covered with thin crusts. The most striking feature of the case was the large lymphatic trunk, the size of a pipe-stem, which ran from the external commissure to the preauricular gland, reminding one of the lymphatic trunks of glanders. At one point this trunk showed a soft enlargement with a slightly yellowish hue, indicating a small abscess, and the summit of the ridge formed by the trunk was slightly red. In a general

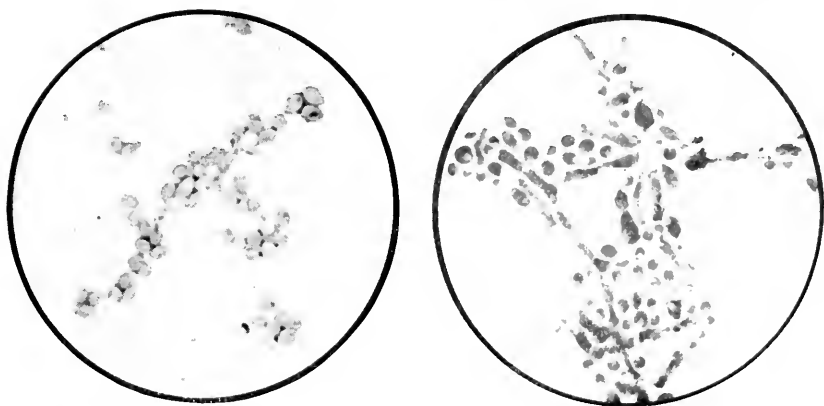


FIG. 4.—Unstained Agar Culture of Sporotrichosis from Ocular Conjunctiva x 1000.  
FIG. 5.—Stained Agar Culture of Sporotrichosis from Ocular Conjunctiva x 1000.

way the trunk had an S curve running through the enlarged preauricular, angulomaxillary and sub-maxillary glands. Repeated microscopic examinations of the pus from the small abscesses of the upper lid showed no micro organisms, but cultures from them showed a germ which Morax at first thought to be the sporothrix of Schenck, but in his later publication he declared that it was the sporothrix of de Beurmann. The patient was put upon 2 grammes of potassium iodide a day. After about three months, the dose having been raised at times to 3 grammes a day, he seemed to be entirely well.

Morax's second case, reported in his second paper, was that of a woman of 38, who showed small yellowish white nodules of the right semi-lunar fold, which ulcerated slightly and then produced more or less pediculated granulations. There was one similar nodule in the lower and one in the upper-outer retro-tarsal fold. The preauricular and cervical glands of the same side were slightly

enlarged and a little tender. There was very little pain or reaction. Under surgical treatment and applications of silver the disease got rather worse, but as soon as the sporotrichosis germ was detected in the nodules, the patient was put on KI, 2 grams a day and made a perfect recovery. One of Morax's pupils, Fava, (<sup>8</sup>) who was inoculating a rabbit with an emulsion of the sporotrichum spores from the preceding case, got a drop into his own eye, which he washed out after a lapse of  $1\frac{1}{2}$  hour, with a solution of oxyeyanide of mercury 1/4,000. About ten days later he noticed a slight irritation and congestion of the lower conjunctiva, with the development of a small yellowish spot in the lower tarsal conjunctiva, and this was followed by the appearance of one other similar spot in the lower tarsus and several others in the central edge of the upper tarsus with considerable redness and swelling of the upper conjunctiva, and swelling of the preauricular and angulo-maxillary glands. These nodules tended to ulcerate slightly and to develop granulations similar to those following a broken chalazion. There was also a slight inflammation of two of the hair follicles of the upper lid of the other eye. The sporotrichum was found in abundance by cultures from the surface of the ulcerated nodules. A cure was accomplished in the course of two or three months by KI in doses of  $\frac{2}{8}$  grams a day.

The only other case of proved sporotrichosis of the eye-lids that I have found was reported by Thibierge and Castinel at the Paris Hospital society, and cited by Morax in his second paper (p. 335). The patient was a man of 30 years, whose trouble began with the development of a small granulation at the left external palpebral commissure; following this there developed a generalized cutaneous sporotrichosis. From the original lesion there developed a crescentic ulceration, taking in the greater part of the lower lid and ascending on the bridge of the nose. The surface was more or less covered with crusts, after removing which the area showed a mass of hemispherical granulations; the lid border was not ulcerated, but the lashes had disappeared and there was slight ectropion with some redness of the whole palpebral conjunctiva. In the upper lid there were three softened nodules, altogether making a bunch the size of a small bean, reddish-brown in color with a tinge of violet. This man also had lesions in the pharynx and larynx, showing themselves first as reddish swellings and later presenting masses of granulations similar to those of the skin. Complete recovery on KI.

Besides the foregoing there remains the possible case of Burnier



(<sup>9</sup>), in which a youth of 16 years, who had what was afterwards shown to be generalized sporotrichosis of the skin and subcutaneous tissue, developed 4 or 5 pin-head nodules in the left inferior conjunctival cul-de-sac, and four pea-sized ones in the right cul-de-sacs, without any glandular enlargement. These healed under applications of silver and the galvano-cautery, without any cultures having been made from them.

The case which I have to report is the following: Housemaid of 18 years noticed left eye getting red about two months ago. In



FIG. 6.—Probable Sporotrichosis of Eyelid. Note Nodular Lymphatic Trunk from Palpebral Fissure Toward Ear.

the course of two weeks, the disease developed to approximately its present condition (Fig. 1.) The young woman was fairly healthy, with nothing of special moment in the history. She attributed the trouble to having an upper tooth pulled on the left side, stating that the eye began to feel sore the next day. I found the right eye normal, the left eye slightly irritated and watery, tarsal conjunctiva and retro-tarsal folds were slightly congested and the ocular conjunctiva presented a somewhat crescentic thickening, reaching from slightly above the equator at the inner side of the cornea around below the cornea to a point  $\frac{1}{8}$ -inch above the horizontal

meridian at the outer side of the cornea. At its broadest portion below the cornea, it was about  $\frac{1}{4}$ -inch across, tapering out to the somewhat blunt extremities between which and the corneal margin there was a narrow strip of normal conjunctiva. The thickening was rather smooth and light red at its broadest portion, but at the extremities it was nodulated with lumps from  $\frac{1}{16}$  to  $\frac{3}{32}$ -inch in diameter, and presented the general appearance of a retrotarsal fold in a case of moderately gelatinous trachoma. No perceptible swelling of preauricular or cervical glands, but about an inch from the outer commissure a subcutaneous lump about the size of a small pea could be felt. One of the nodules down and out was yellowish, and contained a semi-fluid substance from which cultures were made on serum and agar-agar. These left at room temperature showed, after several days, a scanty but characteristic growth in pure culture, of the sporotrichum (Figs. 1-5) of the de Beurmann type, so far as I could judge, although I must confess that I am uncertain as to whether there is any real difference between de Beurmann's germ and that of Schenck.\* A second culture made from a nodule higher upon the ocular conjunctiva two weeks later gave a similar result. The girl was put upon iodide of potash, 20 drops of the saturated solution three times a day; and after two weeks it seemed to me that the whole thickening was a trifle smaller, but at the extremities of the thickening there were now several nodules slightly lighter colored in the center and containing a little serum fluid substance, which again gave a pure culture of the sporotrichum. The dose of the iodide was doubled and the patient was supposed to have taken this for a month, when it was found that she was very neglectful of her medicine, taking it, as she admitted, only occasionally. When last seen, about July 1, 1910, the growth had diminished greatly in extent, but since then I have lost track of the patient.

As I am not sure that I shall see her again, and as I wish to get into the field as early as possible, I report this case without being able to describe the final outcome.

Although this is the only case in which I have been able to demonstrate the presence of the sporotrichosis germ, I have, in past years, seen five other cases, which I am quite sure were of the same nature. One of these patients was a girl of four years, who was brought to me Jan. 30, 1906, with the story that the parents had noticed a growth on the right lower lid since the preceding Christmas, showing first in a small pimple in the outer third of the lid, and growing slowly but steadily ever since. No history of injury.

The left eye and lids normal, but the outer  $\frac{3}{5}$  of the right lower lid (Fig. 6). is covered from the ciliary border downward with a rough mass of granulations elevated  $\frac{1}{8}$ -inch above the surface,  $\frac{1}{4}$ -inch broad at its outer extremity, and about  $\frac{1}{8}$ -inch broad at the inner extremity. The granulations are of a reddish grey, covered partly with thin crusts. Skin around it normal except at the outer extremity, where there is a patch of skin about  $\frac{1}{4}$ -inch square, purplish red. From this a faint, interrupted reddish streak runs out along an irregularly thickened line of tissue to a swelling



FIG. 7.—Probable Sporotrichosis of Eyelid, Possibly Starting from Tear-Sac.

$\frac{1}{2}$ -inch in diameter, showing deep purplish streaks and slight fluctuation half way between the ear and the eye. The growth was easily scraped away with a sharp spoon and the discolored skin at the outer commissure was found to cover a similar mass of granulations. These were also scraped out and the whole area cauterized with the Paquelin. The swelling over the zygoma was opened and found to contain the same sort of granulations with a slight amount of pus. This was all scraped out, leaving a hole  $\frac{3}{4}$  inch in diameter by  $\frac{1}{4}$  inch deep. This was filled with iodoform powder.

Although I suspected that this case was one of tuberculosis, I noticed that the granulations which filled the cavity on the cheek and that beneath the undermined skin of the outer commissure were redder; that is not so grey as those that I had seen in tuberculous processes. The pus and granulations were examined for tubercle bacilli and blastomycosis with negative results. The girl was sent home in apparently good condition, but returned in about six weeks with another swelling over the right malar bone. This was found to contain a little pus and a mass of granulations. It was cleaned out and filled with iodoform powder, and the iodide of potash was continued at home. She made a perfect recovery, and her mother reports in the spring of 1910 that she has had no further trouble.

The second case, very similar to the preceding, was that of S. M., a boy of 10 years, who for some time had noticed a swelling on the left lower lid. The examination showed two elevated areas of rough granulation tissue, covered with slight crusts, one of these just below the lashes,  $\frac{1}{4}$  inch long, an another  $\frac{3}{32}$  inch below this, twice as long, both about  $\frac{1}{8}$  inch in width. About an inch from the outer canthus a swelling  $\frac{1}{4}$  inch in diameter, slightly red on the surface, then  $\frac{3}{4}$  inch further out toward the ear another reddish swelling  $\frac{3}{4}$  inch in diameter. These both showed indistinct fluctuation. The masses of granulation on the lids were scraped away and burned with the Paquelin cautery and covered with Thiersch flaps. The swellings over the cheek were opened and found to contain a little pus and masses of granulations. These were scraped out and the cavities filled with iodoform. Four or five X-ray treatments were given in the next ten days and, although the larger Thiersch flap did not heal on, the patient looked so well that he was sent home, and a letter from his mother received May 29, 1910, a year after he went home, says that he had no further trouble. The record does not state whether this patient was given iodide of potash, but I am quite certain that it was given to him, since I suspected it of being one of blastomycosis, although the microscope gave no evidence of it.

These two cases are so similar to that of Morax and to others reported by the French, that I have no doubt of their sporotrichotic nature.

The third case is that of Mrs. S. H., aged 22: came to me March 3, 1908. Personal and family history good; for four to five months has noticed growth below the left eye. It has been increasing slowly in size and, although purplish red in color, the surface

was smooth until lately. S. P. In the inner half of the left lower lid (Fig. 6), a mass of granulation tissue  $\frac{1}{4}$  inch in diameter, raised rather more than  $\frac{1}{8}$  inch, covered with a thin crust. From this a purplish red mass, covered with very thin skin, runs up to the bridge of the nose at the inner commissure. Absolutely no history of lachrymal trouble; conjunctiva normal and duct patent. Under cocaine the granulations were scraped out and followed up



FIG. 8.—Probable Sporotrichosis of Eyelid. No Disease of Tear-Sac, But Minute Fistula Showed That Germs May Have Reached the Lid Through the Sac.

under the skin to the bridge of the nose. An iodoform dressing was applied; patient was given iodide of potash—just how much is not noted—and she made a complete recovery. On June 15, 1910, she writes that she is entirely well and that the scar is only slight.

The second of this class was A. R., a boy of  $4\frac{1}{2}$  years, whose parent noticed a reddish lump growing in the right lower lid about January 1, 1909. About the same time a painful lump appeared near the angle of the right jaw; the tumor in the lid increased slowly, but caused no discomfort. He was brought to me March 10, 1909. S. P. Eye normal, but at the inner side of the right lower lid, an inch below the caruncle, there is a reddish elevation extending obliquely for a distance of about  $\frac{5}{8}$  of an inch, and about  $\frac{1}{4}$  inch in width at its widest part. (Fig. 7.) This is dark red, elevated  $\frac{1}{8}$  inch, the surface covered with coarse elevations  $\frac{1}{16}$  to  $\frac{1}{8}$  inch in diameter. This is where the epidermis is broken down; the rest of the tumor is covered with smooth thin skin. Squeezing on the neighboring tissues expresses a little thin pus; no positive connection with the tear-sac, but pus looks as though mixed with tears. The eye is not watery nor does it show any other signs of dacryocystitis; liquid syringes freely from tear-point to nose. Glands below angle of right jaw considerably enlarged, but no other enlargement on the face between the eye and the jaw-angle. Child perfectly healthy in other respects; no history of trauma. The tumor was scraped away and the child sent home taking KI; but as, after three or four weeks, the growth showed a decided tendency to return, the child was brought back and the operation repeated, after which, under 15-40 grains of KI a day, a complete recovery ensued, except for a minute fistula in the scar, from which a little water comes when the boy has a cold.

Besides these two cases in which the infection may have come through the tear-sac without causing any disturbance there, I saw, many years ago, another child, a girl of about 4 years, with a similar granulation mass extending from the lower border of the right tear-sac two-thirds of the way to the outer angle of the lower lid. The inner half of the tumor was rough and crusty, while the rest was covered with thin smooth skin. In this case, however, the tear-sac contained pus, and although the tumor did not reappear after being very thoroughly scraped out, the dacryocystitis persisted and was present when I saw her again after several years, although the only thing to remind one of the former tumor was a thin whitish scar extending half the length of the lower lid.

The lack of bacteriological evidence, of course, prevents definitely classing these cases as sporotrichosis, but since they were not tuberculosis nor syphilis, and the microscope showed no signs of blastomycosis, they can hardly have been anything else, considering

how completely the microscopic and clinical conditions coincide with those of sporotrichotic infection. I examined the pus from these cases with the microscope, but that I found nothing is not surprising, since it is only rarely that the sporotrichum is found in such smears. That the germ was not found in cultures is probably due to the fact that as I was giving my laboratory very little personal attention, the cultivation was tried only in the oven at a temperature at which we now know some races of the germ develop very slowly or not at all, and as no growth appeared within a few days the tubes were laid aside and lost track of.

Sporotrichosis of the conjunctiva and eye-lids, then, has been observed in three forms. I. The dermic or hypodermic granuloma, with swelling of the preauricular, sub- or retro-maxillary or cervical glands; sometimes with thickened lymphatic trunks and small granulation abscesses along the line of the lymphatics from the eye to the ear, and in one case with ulceration of the lid border and minute abscesses of the skin of the lids. In this class belong the cases of Danlos and Blanc, Morax' 1st and 3rd cases, and, without much question, cases two and three in my series. The last three of my cases, if future reports make it more certain that they were sporotrichosis, should be placed in a sub-class under I, on account of their typical location and their possible origin from the lachrymal sac. In class II the disease shows itself as yellowish nodules from the size of a pin-head to  $\frac{1}{8}$  inch in diameter in the retro-tarsal folds, the semi-lunar fold, or the peripheral edge of the tarsal conjunctiva; generally with adenopathy and in one case with ulceration of the lid margin. These sub-conjunctival nodules contain but little pus, and sometimes break down and form ulcers or masses resembling the granulations from a broken chalazion. Class III contains, so far, only my first patient, showing a finely nodular, flesh-colored and reddish thickening of the ocular conjunctiva, some of the nodules containing a little yellowish fluid; tendency to adenopathy shown by lymphatic nodule near outer orbital margin. Subjective symptoms in this as in all the other cases—moderate.

It is interesting to note, in view of the fact that the disease is most frequent among those whose occupations bring them into contact with fresh agricultural products, that all of my patients resided on farms or in small villages, and that none of them had any history of trauma.

As Morax has pointed out the main questions in the differential diagnosis of sporotrichosis concern the exclusion of syphilis and

tuberculosis, but blastomycosis should also be taken into account, and some of the cases, i. e. those in which a series of abscesses occur along a thickened lymphatic trunk, suggest glanders; but the ease with which the germ can be cultivated at room temperature on maltose agar, or almost any of the ordinary media, readily permits the clearing up of any doubt. Moreover, in cases in which the surface lesions have healed, the retrospective diagnosis can sometimes be established by the agglutination test, since the blood of these patients has a high agglutinative power for the spores of the fungus.

For an account of the literature and pathology of sporotrichosis see the excellent articles of Morax; also for a general summary of our knowledge on the subject, the reviews of Kren & Schraeuk, Wiener Klinische Woch., 1909, No. 44, and Duval & Vinard, Lippincott's International Clinics, 19th Series, Vol. 1.

I wish to thank Prof. Waite of the University of Nebraska and my assistant, Dr. J. B. Potts, for help with the cultures, and F. T. Harmon of Chicago, for the micro-photographs.

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The doubt which Morax seems to entertain as to the existence of any real difference between the germs of Schenck and that of de Beurmann deserves to be emphasized. The grounds upon which de B. first made his distinction seem to have been entirely abandoned and the differences now emphasized depend upon the study of the descendants of an old culture sent to France by Hektoen a number of years ago, and the performances of this germ differ most strikingly from those described in the original paper of Schenck. For instance, the French say that the Schenck germ ferments lactose, the statement of Schenck to the contrary, notwithstanding; the French say that the Schenck germ does not get brown on carrot, but Schenck, although he apparently did not try carrot, found his germ to get brown on everything that he tried, including potato. So it may well be that the other differences between S. Beurmanni and the French specimen of S. Schencki are merely the result of variations produced by the long laboratory life of the latter; or it is quite possible that the germ sent to France by Hektoen was not identical with that of Schenck.

The germ from my case, when kept at oven-temperature, grew either not at all or so slowly that even after several weeks, only minute nodules could be observed. At room-temperature, it grew readily upon every medium and vegetable that was tried. Upon common glucose, and lactose agars it first formed white asbestos-like colonies with a peak in the center of each so as to give the characteristic mountainous appearance described by Schenck. On most solid media, including carrot, these colonies become dark brown in the center, in from 5 to 10 days, retaining a white border; *on lactose-agar, however, the colonies remain white indefinitely.* According to Prof. Waite of Lincoln, to whom I sent a culture, the germ does not ferment lactose; produces in rats and guinea pigs very slight effects from sub-cutaneous injections but, intra-peritoneally, causes marked orchitis with sometimes a fatal general infection.



## THE EDUCATION OF MARIE HEURTIN, DEAF, DUMB AND BLIND FROM INFANCY.

BY SAMUEL HORTON BROWN, M. D.,

PHILADELPHIA.

Among the recorded instances of education of individuals with deficient special senses, the case of Helen Keller is often referred to as an example of what can be accomplished with the least groundwork in this direction, but the case of Marie Heurtin, which was recently featured in a volume by Professor Louis Arnold of the University of Poitiers, under the title "Souls in Prison, The French School of Deaf Mutes," is a further monument to the patience and persistence of educators engaged in this work.

The dramatic features of this case engaged the attention of the French Academy of Sciences and one of its sessions was devoted entirely to it.

The story as narrated by those familiar with the facts relates how on March 1st, 1895, Heurtin, a caskmaker, with his wife and ten-year-old child, Marie, after traversing the polygon of the Arsenal at Poitiers, reached the Convent of de Larnay, supported and managed by the Sisters of Wisdom. This was the beginning of a new epoch in the life of the child. While she was ten years old she presented none of the characteristics of a girl of that age and was repulsive in every particular. She was deaf, dumb, and blind from time of her birth, and the nystagmus of which she was the subject made her appearance especially startling. Being out of all communication with those about her, she was deprived of all the ordinary training of mind and her traits were more or less animal in character. The uncertainty of where she was stepping compelled her to crawl for the most part, and when she did assume the erect posture she had a peculiar dragging gait. Added to these outward deflections was the possession of an ungovernable temper.

The father, being a very poor and hard working man, appreciated the necessity of special training for the child, but scarcely felt that he and his wife were equal to the task of taking care of the youngster, let alone educating her, so they sought admission for Marie to the various institutions only to be met with disappointment from time to time. The blind asylums refused her because she was deaf; the deaf because she was mute; and the mute

because she was blind and deaf. Those institutions that had taken her were unable to do anything with her on account of her ferocious temper, and she was returned after a short stay to her parents. But at last, upon the advice of the Cure of Nantes, they sought in despair the aid of the Sisterhood at the Convent of de Larney, after a tramp of two hundred miles. The Mother Superior was much impressed by the history of the child as told by the father and by the dire distress of the parents, and accepted the child as an inmate, although she was the first of the kind they had ever encountered. The work of the institution had to do entirely with the deaf and dumb.

The handling of such a case was naturally perplexing. For the first few months she was allowed her own way for purposes of observation and her bestial tendencies were marked. Her temper manifested itself in pseudo-convulsions and strange noises. Day and night having no significance to her at this time, she would get out of bed at night and crawl indefinite distances guided by the floor and the walls. The latter she distinguished by the plaster, which she scraped off in her wanderings. Anything portable with which she came in contact she straightway destroyed. These maniacal outbursts were at times witnessed by outsiders, and the report became current that they were superinduced by cruel treatment on the part of the Sisters.

This naturally led to investigation and the public were surprised to learn that instead of torturing an inmate one of the pious Sisterhood, Sister Sainte Marguerite, was making it her special life work to educate the apparently hopeless deaf, dumb and blind imbecile. This pious woman with wonderful patience set about her task and watched every detail of the child's natural tendencies without interruption, for an indefinite period. Gluttony being the most pronounced of the child's traits, she determined to make the entering wedge through this channel. She learned that Marie was especially fond of eggs, and while feeding her one day she withdrew the egg after it had already been in the girl's possession and made the symbol of egg in the youngster's hand.

The wrath of the child knew no bounds, but she failed to obtain it again and other food was given to her instead. For several successive days a similar experiment was made and at last the light dawned upon the feeble mind that she was expected to make the sign suggested to her if she were to get the egg. From this

beginning Sister Sainte Marguerite exerted her infinite ingenuity until the child had mastered the alphabet of the blind. With this means of communication with the surrounding world established, the Sister was able to teach this stunted brain the elements of ethics, morality, and religion, and slowly but surely the ferocious animal-like temper dwindled and the intellect flourished. She eventually learned to manipulate a sewing machine in addition to accumulating quite a fund of intellectual knowledge.

Her teacher, Sister Sainte Marguerite, was complimented by the French Academy and by the President of the French Republic. Marie Heurtin is now twenty-five years of age, and while she cannot see, she has six different means of conversing and is capable of engaging in a conversation of considerable range. She is able to knit, sew, make chairs and baskets, and draw upon the blackboard, all of which accomplishments she owes to the devotion of the Sister. This remarkable case suggests an obvious course in all similar instances.

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## A HOOKFRONT BINOCULAR MAGNIFIER.

BY WENDELL REBER, M. D.

PHILADELPHIA, PA.

Illustrated.

Dissection for after cataract is an operation that calls for the sharpest sight imaginable. The tissues to be attacked are of almost identical translucency (especially by oblique light) as the surrounding tissues and everything that will add to a clearer view and a better contrast must prove of much help to the ophthalmic surgeon. Oblique illumination is one of the greatest aids, indeed for some years I have done all my dissections in a darkened room with oblique illumination. The ordinary hand-reading glass with a focus of 20 centimeters (8 inches) removes the condenser entirely from the field of operation and the operator sees brilliantly illuminated any of the tissues he wishes to approach and nothing else. If he be myopic one or more diopters (the more the better within certain limits) then, for the time being at least, the Gods have been good to him. If he is not, he can create the condition for himself by the use of any one of a number of binocular magnifiers, notably those of Berger, Jackson and Collins. Each has advantages of its own. The particular disadvantage of the original Berger was that it cut off all view of the surrounding field so that the surgeon's view was limited entirely to the 10 to 12 mm. field of

operation. This has been met in the later models by fenestrating the device in the sides and sometimes below, which not only allows a much wider field of observation, but also permits it to be worn over a pair of spectacles, which the older device could not. All these objections are met to much better purpose in the binocular magnifier brought out by Edward Jackson about ten years ago, and seemed to solve all difficulties. This allows it to be folded by its ease of movement, much easier adapted to the convergence of the surgeon. This is no small matter, as many surgeons find it difficult to maintain for any length of time the high degree of convergence necessary to the performance of an operation under these circumstances. Treacher Collins sought to obviate these drawbacks by mounting a pair of convex prisms (bases in) in a spectacle frame much like the lighter test frames furnished with many test cases. They are made up with straight temples, and while they are fairly light in weight, one can conceive that they

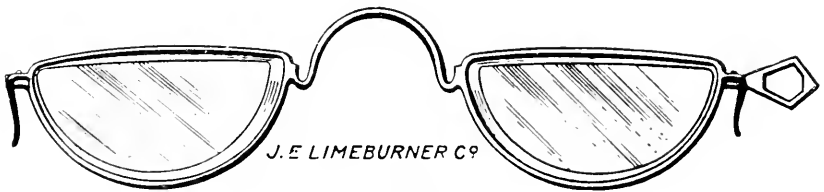


Fig. 1.

might at a critical time slip off the surgeon's face and even fall on the patient's eye. Indeed, this very accident, it is said, happened to its introducer. Of course the simple matter of having the temples made as hood temples instead of straight ones does away with this fault, but the device is rather heavy and clumsy on the face, although it permits a trifle fuller view of the field of operation and all the surroundings than either of the other two. Being devoted to the use of Jackson's binocular magnifier for the past eight years, I have felt that I wanted to carry it about with me and two years ago the adaptation to it of the folding steel head band seemed to solve all difficulties. This allows it to be folded up and carried about in the coat or hip pocket, and so modified it proved eminently satisfactory, save that the closer range at which it must be used (2 1-2 to 4 in.), restricted my movements very much in all operations. About a year ago it occurred to me that

the whole principle could be incorporated in a hook front, giving the old-time "pulpit spectacle" effect. (See Fig. 1.) I therefore made up a hook front carrying a  $+7.00$  D. sphere combined with a prism of six prism diopters, ground on a heavy toric curve. This can be hooked on over my spectacles and gives a most perfect view of the field of operation, allowing one to detect even the minutest folds in an otherwise clear posterior capsule. Moreover, over or under them, full and clear view of the adjacent instrument table and all objects about the room can be had at all times. In short, it creates temporarily, an ideal bifocal operating glass that is quite as beautifully satisfactory in the consulting room or clinic room for the examination of the eye by oblique light. No claim of originality is made for this idea, as I am sure a fair number of ophthalmic surgeons the country over have made use of some such device. At the last meeting of the American Medical Association at St. Louis, where I exhibited my own device, Dr. Allen Greenwood, of Boston, showed me practically the identical thing in a pair of spectacles (but again with the straight temples employed by Collins) which he told me he had been using for twelve years. I must insist, however, on the superiority of the device used as a hook front. This does away with an added pair of spectacles to be worn over one's own glasses, and if they should happen to have three diopters of astigmatism in each eye, as I have



Fig. 2.

the slight disturbance of the axes of one's own glasses that might be readily produced by a second pair would constitute a bona fide objection. The hook front binocular magnifier seems to meet every objection. It is light, of such neat proportions that it can be slipped into an ordinary spectacle case and carried in the pocket. (See Fig. 2.) In a goodly number of operations and countless office and clinical examinations it has met every requirement made of it. Not least among its advantages is the fact that the operating distance is six inches (and this can easily be made seven), affording the operator much more freedom in his manipulations about the eye.

1212 SPRUCE STREET.

## LONG-CONTINUED USE OF STRYCHNINE IN TOXIC AMBLYOPIA.

EUGENE M. BLAKE, M. D.,

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The following case, while only an isolated example, shows the good results which may be obtained from the long-continued use of strychnine in alcohol-tobacco amblyopia.

The patient was a man of thirty-eight years, a telegraph operator by profession, and was first seen October 3, 1908. He came because of failing vision, which had been noted for the past year. There was decided pallor of the optic discs on the temporal side, but fundi and media otherwise normal. Vision was reduced to counting fingers at eight feet with the right eye and ten feet with the left. A central scotoma for white and colors was easily demonstrated and reds and greens were sadly confused.

Upon inquiry it was learned that the patient had used alcohol extensively for the past four years, on an average eight to ten glasses of whisky a day. He had been a heavy smoker since a boy of twelve, usually smoking a pipe.

The advice to stop the alcohol and tobacco at once was complied with and strychnine sulphate, gr. 1-30 t. i. d. ordered. Vision rose to 20/200 during the first week and remained so for six weeks. Owing to lack of improvement the prognosis was considered poor, but as the patient insisted upon treatment I began the injection of strychnine into the temples, as practised by the Germans, gr. 1-30 twice a week. Home treatment consisted of six tablets daily by mouth and for a short time only, potassium iodid, gr. 10. t. i. d. From the beginning of the injections vision began to improve, though slowly, until the present time when it is 20/15 in each eye. From July, 1909, to May, 1910, the patient was not seen but the use of strychnine tablets was continued, the patient taking as many as ten 1-30 gr. daily for a period of two months.

The color perception has improved greatly and the patient is only confused by the less common shades and colors. The optic nerves look about the same as when first examined.

The interesting features of the case are (1) the length of time required to obtain good vision, (2) the amount of strychnine taken without symptoms, (3) the fair return of the color sense, and (4) possibly, the value of the injections into the temple.

## A SIMPLE DEVICE FOR PNEUMO-MASSAGE OF THE EYE.

By J. W. DUNN, M. D.,

CAIRO, ILL.

(Illustrated.)

Dr. F. B. Eaton's article on this subject in the July number of the RECORD, in which is described a method of converting Siegel's Ootoscope into a cup for this purpose, leads me to present a device of my own that I used very satisfactorily for a long time. If I remember correctly, it was Dr. Garey, of Baltimore, who began advocating, seven or eight years ago, the use of massage of the eye-ball for certain diseases of the interior of the eye. While thinking over the subject one day during that time, it occurred to me that a very simple cup for applying this massage might be made from a soft



rubber bulb of the proper diameter to fit the orbit, if it had a hard metal tip to which a small rubber tube could be attached. It was easy to find such a bulb at the drug store, as many syringes have them. I took one and cut it into halves at its equator. The edge of the half containing the metal tip was trimmed so that it would fit evenly over the eye-ball and rest against the edges of the orbit. A piece of soft rubber tubing connected this with an ordinary electric aural masseur. The accompanying cut shows such a cup.

This simple instrument was used till some manufacturing house put on the market a binocular instrument with glass cups to fit the eyes. My device was then discarded for this more elegant one (which is also inexpensive), though it had been used effectively for several years.

**AN INTERESTING CASE OF ANISOMETROPIA.**

BY CHARLES W. KOLLOCK, M. D.,

CHARLESTON, S. C.

A white man of fifty-nine years of age consulted me about his eyes. There was alternating divergent squint and when standing near him it was noted that he fixed near objects with the left eye and distant objects with the right, and that while one eye was seeing the other was turned out. This condition he informed me had existed since childhood and that he, though an accountant, had experienced no inconvenience to speak of, and had never worn glasses. The orbital muscles were strong and healthy. Vision was as follows: R. 15/40 and L. 15/CC. The right with  $+ 1.25$  cyl. ax.  $180^\circ$  saw 15/XX, and the left with  $- 4. - 1$  cyl. ax.  $90^\circ$  saw the same. The right with  $+ 3 + 1.25$  cyl. ax.  $90^\circ$  could read Jaeger 1 at 12 in. The left with  $- 1$  cyl. ax.  $90^\circ$  could see as well. With the proper corrections for both eyes for near and far he could by a considerable effort make the eyes work together and for the time of course they did not diverge, but this was not only a strain but very disagreeable and he could not keep it up. It is reasonable to suppose that had he been properly fitted when much younger that co-ordination could have been obtained without much trouble, but at fifty-nine it was not only highly improbable but not worth trying for. He was accordingly given the following correction, which will improve the near and distant visions, and the two eyes will continue to work as they have always done, the right for distance and the left for near: R.  $+ 1.25$  cyl. ax.  $180^\circ$  and the left  $- 1$  cyl. ax.  $90^\circ$ . Another interesting feature of the case is that the astigmatism in both eyes is against the rule.

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Surgeon Eugene J. Grow has been detailed to the Solace to study conditions of lighting on board that vessel with a view to protect the eyes of gunners and those requiring acute eyesight. The Surgeon-General of the Navy is taking a special interest in the work. Amongst other improvements is the safeguarding of the eyes of the men who adjust carbons on the searchlights, protective goggles being used.



# Reports of Societies

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## BRITISH MEDICAL ASSOCIATION.

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### SECTION OF OPHTHALMOLOGY.

LONDON, JULY 27TH, 1910.

MR. CHARLES HIGGINS (LONDON), PRESIDENT.

The President, in his opening address, reviewed the changes in the practice of ophthalmology that he had known during his experience of 40 years. In some branches there could be no doubt that they had made great advances, both in theory and practice, in others the advance, if any, was small.

Considering this second group, he instanced the grave diseases of Trachoma and Glaucoma. Of the first we had learned something more of its histology and possibly of its pathology, but save for the fact that we had dropped the old name of "granular lids" or "ophthalmia" for the more classical name of trachoma, we had made no alteration in our practice regarding it that was worth the name. Of glaucoma it could be said we had learned a great deal of its pathology, but as regards its treatment he was sure that a "bad" iridectomy was now, as it was 40 years ago, the very best and most successful operation; and by a "bad" iridectomy he meant one that left a minute fragment of iris in the scar so that the wound never properly healed, but maintained constant leakage proportional to the tension of the eye. In other diseases, such as inflammation of the anterior uvea, we had little advance to record, these cases were as mysterious and intractible as ever. In diseases of the lachrymal apparatus the only improvement in methods he could cite was the very general cessation of the practice of slitting up the canaliculi for every form of epiphora; it was a good change.

Their greatest advances had without doubt been in the realms of optical work. The treatment of squint had been revolutionized, correction of difficulties of vision was uppermost, and operations had become proportionately rare with the best results.

In quite recent years they had improved greatly in their methods of testing color vision, thanks largely to the labors of Dr. Edridge Green, but the matter was still the subject of inquiry, and it was without doubt a complicated one.

The establishment of the universal use of the metrical system of measuring lenses had been of the greatest value and convenience in practice, younger members of the profession could scarcely conceive the worries in fractional calculations they had escaped by the substitution of dioptries for inches. Again, they had gained much by improved and standardized test types. The appliances of their work had been improved by the universal use of electricity, it was a boon not to be forgotten.

Coming to operative measures particularly, he could not see very much change. To judge by the makers' catalogues, it would seem that every man invented instruments of his own, but the essential tools of their craft remained unchanged. Graefe's knife, the keratome, forceps, and cystotome, were the basis of most modifications of cataract instruments. But in the introduction of the giant magnet of Haab, there was a real gain, notwithstanding it was an appliance for hospital work rather than private practice.

In some fields of our labors there had been a recrudescence of old operations. Sclerotomy for glaucoma bid fair to be fashionable once more, but it was no new thing. Bader and himself had practiced it by incision and by the use of trephines; they mostly did it to relieve tension in blinded eyes, and the effects were undoubtedly good; but the practice had been overlayed by the fashion for iridectomy. Again, removal of the lens in its capsule was an old operation. It was described in Macnamara's text-book, and then mentioned as old; he did not favor the method himself, but he had practiced it rather by way of accident than purposefully, and no harm had resulted; the human eye would withstand a lot of handling.

In the treatment of syphilitic affections, changes were observed; at one time the use of mercury was grossly excessive. Then came the inevitable reaction, and its replacement by infinitesimal doses of potassium iodide; now their practice seemed to be rational and successful.

In local anesthetics they had obtained a great gain, the contrast to operating with badly administered general anesthetics and of former risks to post-anesthetic vomiting, to their present invaluable cocaine, was immense; it appeared to him to be the greatest advance of his time. Antiseptics had also done much for them, asepsis little, for the attainment of this in the conjunctiva was well nigh impossible. Then in the objective diagnosis of

refractive errors, the substitution of retinoscopy for the use of the direct ophthalmoscopy had been invaluable; he remembered the time when such a master of the refraction ophthalmoscope as John Couper was not ashamed to spend hours over a few cases, which to the surgeon of today would occupy but minutes.

One other point was worthy of remark: that was the enormous increase in the number of ophthalmic surgeons. In his early days there were but a handful in London, now there must be more than a hundred. He hoped competition would have no ill effect upon their work. In this connection he wished more power to the British Medical Association, and an increase of its efforts to prevent abuses, both within and without the profession.

### **"The Future of Ocular Therapeutics."**

Dr. G. A. Berry (Edinburgh) then opened a discussion on "The Future of Ocular Therapeutics": considering the prospects of advance in the use of local and general remedies. The underlying idea of their discussion was an inquiry as to how far did our knowledge, our aspirations, and the directions given to our scientific knowledge and practical views of today, indicate the direction in which any real advance may be expected to take place in the near or more remote future. Practical therapeutics cannot be brought within the limits of very definite rules, a great deal will always depend upon the individuality, the temperament, the judgment, and the resourcefulness of the medical man. Further there is an equal variability in the toleration, vulnerability, and diathesis, of each patient he is called upon to treat. It is even so in eye affections where diagnosis is so much more sure than in other branches of medicine. The progress of science in physiology, pathology, and bacteriology, and also in chemistry and physics, is constantly affording new indications for treatment. And similar advances tend to explain the effects of therapy which have hitherto been empirical. Nevertheless it seems true that the main advances in treatment are those which clinical experience has established. Scientific discovery may lead to changes, but does not ensure that such new treatment shall be better than, or even as efficacious as other methods which do not appear to comply with a more accurate knowledge of the pathology of a disease. Clinical experience can alone demonstrate utility or failure. Part of the reason for the failure of indications afforded by scientific

observation is due to the difference of effects of the same interference whether it be upon normal or diseased tissues. Even laboratory experiments in antiseptics do not necessarily ensure effectiveness of that reagent that is presumably most sure; local tissue reaction introduces a complexity not recognizable in laboratory experiments. So with tonics, antitoxins, sera, vaccines, etc., for which there appear scientific indications; in these the inferences are complicated, and the outcome far from commensurate with expectations entertained. At the present our art lags behind our science; yet even with that our art advances slowly but sure, for with every successful assimilation of a scientific indication blind empiricism is reduced. Excluding operative and optical treatment, he considered local and general treatment. Both are older than history. Local treatment was known to the Egyptians in earliest times, and general treatment flourished in India and China long before Hippocrates. In local remedies it is curious that many have continued in valued service even today, particularly for diseases not known to be microbic. Mydriatics, mitotics, local anaesthetics, analgesics, vaso-constrictors and vaso-dilators, were of almost entirely recent introduction. Yet of these it cannot be said they are as local applications established on a basis that admits no difference in practice. Witness the abuse of mydriatics, and a too prolonged and too powerful application of local antiseptics. In the future he looked to the more general substitution of pure alkaloids for salts of these reagents. Still it is remarkable that corrosive sublimate, one of the oldest drugs in use, and boracic acid, the first of known antiseptics, should still be prime favorites. It seems likely that we shall discover selective antiseptics for particular micro-organisms; yet it is possible that the combining of different antiseptics may prove of real advantage, for these drugs have uses beyond their bactericidal power. Part of our difficulty in judging of these matters arises from our lack of knowledge as to how the tissues of the eye react to some of these infections when no treatment is given. If we knew something of this we might see how to aid and hasten Nature's curative processes. Particularly do we need greater penetration and less general irritation by the antiseptics employed; and it is a need which may possibly be met. Ionization seems an approach in this direction: perhaps also subconjunctival injection, particularly as regards increased penetration.

Of the use of specific sera and vaccines he would not speak in detail as this fell to the province of the next speaker; but there were undoubted indications that these would prove of real value. New methods for the increasing of the resisting powers of the tissues was a line upon which we might expect advance; heat and cold were valued by everyone, paracentesis had received scientific justification: of dionine he could not speak with much satisfaction. Of other methods of local treatment, electricity, X-rays, radium, and massage, required reference. As regards electricity he confessed the utmost scepticism as to any good having ever been done, in any eye affection whatever, by the use of either the continuous or interrupted electrical currents. And he did not think past experience foreshadowed future benefits. Electrolysis had proved of service, something might be expected of iontophoresis. It was too soon to define the sphere of radium; but it seemed to be better and safer than the X-rays. But we need opportunity for forming an opinion as to its value and limitations.

Referring to general treatment, he noted a curious difference in its usage as compared with local treatment. Old local methods survive at least in simplified forms, but this cannot be said with equal truth of general treatment. Excessive purging, bleeding, blistering, the use of emetics, and the excessive use of mercury, had all disappeared. Sweat cures were now rare, perhaps that was a pity, but they may return to favor. For the future he anticipated the discovery of methods for the arrest of tuberculous lesions, perhaps of preventing them. Syphilis and cancer may conceivably yield to curative and prophylactic measures, and even alcoholism might be eliminated as a factor in disease. Maybe other disturbing influences will arise to fill the places of those overcome, but sufficient to the day is the evil thereof. Improvements in the treatment of glaucoma were to be anticipated; and he would fain hope for successful relief of detachment of the retina, even now they occasionally got some good from Deutschmann's method of double puncture. Brain surgery would possibly relieve them of many cases of optic atrophy. Such were the possibilities that seemed to him to arise out of our present lines of advance: what else was in store for them who could say, was it altogether inconceivable that cataract itself should be capable of prevention or at least of arrest?

**"Bacterial Products."**

Dr. J. W. H. Eyre (London) continued the discussion, taking up the consideration of "Bacterial Products." He said scientific therapy depended upon accurate diagnosis, it was hopeless to expect improved methods of treatment without this as a basis. Take for example the well-known condition of ophthalmia neonatorum: this was not a specific entity, but one that depended on the infection of several organisms, the gonococcus, streptococci, staphylococci, and others. Clearly any specific treatment needed a particular diagnosis. There were two groups of bacterial remedies, antitoxic sera and vaccines. He could not recognize local and general applications. What they did was to imitate Nature so far as possible. Their methods were the outcome of observations of general disease produced experimentally, of a close study of the course of infection, and of the production of anti-bodies directed against the invading organism. Careful inquiry showed that antibodies were specific: Nature was very strict in her methods in these infections, and one antibody would not serve against an alien organism. Hence the primary necessity for accurate diagnosis.

Serum therapy seems to have only a limited applicability. There was one undoubtedly valuable serum for diphtheria, and it was of value in diphtheritic conjunctivitis. Of other sera little good has come, at least in eye work. The anti-pneumococcic serum was not antitoxic but antibacterial, it had proved of some service: but in its experience pneumococci affections of the eye were uncommon in England, though more common on the Continent. One of the difficulties of obtaining specific sera was the inability to immunize animals of sufficient size.

Vaccine therapy seemed to prevent a much more fruitful field. Its object was to provide a stimulus to the natural processes, to provoke the production of anti-bodies within the affected subject in larger quantities than were naturally formed. They obtained cultures of the invader, destroyed them by heat, standardized the preparation, and injected known quantities of the vaccine into parts of the body distant from the original infection. The reaction caused a local production of anti-bodies, which circulating throughout the body exerted a beneficial effect upon the distant lesion. Of those most useful in eye work he would cite the old tuberculin T. R. of Koch, which they had only

recently learned to use in a proper manner. Staphylococcal and streptococcal vaccines had proved of great value in direct contrast to the inutility of the sera. Gonococcal vaccine had proved of value in iritis. The applicability of tubercular vaccine was increasing, and he looked to it to afford a better means of treating tubercular conjunctivitis than any surgical method. Lastly he dealt with the relations of the ophthalmic surgeon to the bacteriologist. Harm was done by isolated individual action, for each failed in a knowledge of the other's line of work. To obtain the best results they must work hand in hand; the surgeon to observe the clinical aspects of the case, the bacteriologist to carry out the specific diagnosis and the indications for specific treatment.

Three papers pertinent to the discussion were then read as part of the discussion.

#### **"Radium Therapy in Ophthalmology."**

Mr. Arnold Lawson and Dr. Mackenzie Davidson (London) read a paper on "Radium Therapy in Ophthalmology." They gave an account of an investigation into the possibility of radium as a therapeutic measure in external disease of the eye and eyelids. The mode of application and some indications gathered from their experience were given with regard to dosage, length of exposure, and frequency of sittings. The immediate and remote effects of exposure were discussed, and the results of treatment detailed. (An extensive tabular summary of the cases treated was circulated.) The report was of an encouraging nature and suggested in particular that corneal ulcers were amenable to this new agent. There seemed to them no doubt that spring catarrh was cured, whereas by any other treatment it had proved intractable.

#### **"The Treatment of Purulent Keratitis by Zinc Iontophoresis."**

Dr. H. M. Traquair (Edinburgh) read a paper on "The Treatment of Purulent Keratitis by Zinc Iontophoresis." The treatment was introduced by Wirz in 1908 for external eye disease. The principle underlying it was the carrying of minute fragments of the metal electrode into the tissue by means of the galvanic current. He demonstrated the apparatus used, and the general methods of anaesthesia and mydriasis adopted in the course of treatment. Up to the present, 27 cases of corneal ulcer had been treated by him in the way, and only those which were

of so serious an order that ordinarily treatment would have been by means of the thermo-cautery. Film preparations and sometimes cultures were made from the ulcer to establish diagnosis. Twenty cases were typical ulcers serpens, the others were atypical. Of twenty investigated cases, fifteen were pneumococcal. The cases treated were described in detail, and it was concluded that on the average the treatment was more expeditious, and the vision regained after cure was superior to that obtained by the cautery. The method was not unduly painful, and the apparatus was convenient and simple.

**"The Use of Carbon Dioxide Snow in Eye Work."**

Mr. N. Bishop Harman and Dr. E. R. Morton (London) read a paper on "The Use of Carbon Dioxide Snow in Eye Work." They pointed out the recentness of the use of this snow in surgery and the established place it had secured in the treatment of capillary naevus. Their communication related to its use in papilloma and rodent ulcer about the eyelids, and in trachoma. In the treatment of external new growths, their experience had been one of great satisfaction. Large papilloma and rodent ulcers had yielded to single applications of the snow for 40 seconds. The application caused scarcely any pain and the after reaction was not discomforting; the growth simply exfoliated and left clean healed surfaces almost indistinguishable from normal skin. In the treatment of trachoma brief and repeated applications were made, beginning with 15 seconds and gradually increasing to 30 seconds, once a week. They did not pretend to assert they had found any specific cure for a disease of so chronic and intractable nature as trachoma; but they pointed out that in cases of six months' treatment fine scarring had been produced quite as readily as one could expect, and that the treatment was free from pain. The preparation of the snow was demonstrated to the section on the succeeding day, cases treated were exhibited, and one of trachoma was treated with snow at the time.

In the general discussion on the subject for the day, Mr. Angus MacGillivray (Dundee) said he thought that Dr. Berry was rather inclined to be pessimistic of the prospects of advance. He guarded the advance in bacteriological methods of diagnosis of the highest promise, e. g. in the case of corneal ulcer their action should be entirely determined by it; if the pneumococcus was found it was an indication for the immediate use of the cautery;



but if the diplo-bacillus was the infecting organism then the cautery was injurious, and zinc became their sure weapon. Again in conjunctivitis the finding of the Koch-Weeks bacillus indicated an inflammation that would speedily depart even without treatment; but the diplo-bacillus would keep up inflammation for long periods unless effectively treated with zinc.

Fibrolysin injection he had found of great service in reducing scars of old interstitial keratitis, in this he disagreed with Dr. Berry. But he was entirely in accord with him in his strictures on the use of electric currents. The co-operation of bacteriologist and eye surgeon was likely to be of great value; but they should not hasten to discard all the laboratory expert condemned, e. g. he found argyrol of value in ophthalmia neonatorum notwithstanding its feeble bactericidal power.

Dr. R. A. Reeve (Toronto) held that the efficacy of dionine had not been fairly tested, unless the powder itself was used in direct application after the use of cocaine. In acute iritis with synechiae solutions of dionine may prove useless, but the powder produced speedy and gratifying effects, they must not be afraid of a marked reaction, the best results followed it. Again he questioned the pessimistic view of electricity; high frequency currents had been of service to him in optic atrophy. Also fibrolysin injections had been followed by resolution of vitreous opacities responsible for detachment of the retina with resultant improvement in field and acuity of vision.

The President remarked on the use of electricity in early optic atrophy: he saw no justification in it, it was rather like flogging a dying horse.

Dr. G. S. Ryerson (Toronto) said he had had gratifying results in the use of radium in a case of epithelioma of the conjunctiva: these were cases that spread to the surrounding tissue, and incision did not secure cure without great loss to the tissues. Xoevus of the lids also yielded readily to radium. He asked what activity of radium had been used by Mr. Lawson.

Mr. Hill Griffith (Manchester) said he had had the most gratifying result from the use of tuberculin in cases of tuberculosis of ocular and palpebral conjunctiva, complete cures had been obtained.

Mr. A. W. Ormond (London) referred to four cases of tuber-

cular periostitis of the orbit in which there was proptosis of the eye, and loss of vision. In all cases part of the mass had been excised and proved to be tubercular. Tuberculin injections had been used with unvarying improvement of the conditions. In two cases complete cure had been obtained, and the other two were improving more slowly.

Mr. Leslie Paton (London) said that in the treatment of detached retina it was important not only to get the retina back into place, but to fit it there. To lack of this, methods that at one time promised fair were eventually disappointing. He recommended the use of the cautery for perforating the sclera and retina; and the attempt to draw the retina into the lips of the wound. This method presented an ideal means of sealing the retina to the scleral cicatrix.

Dr. C. Montague Harston (Hongkong) confirmed the beneficial effects of argyrol in 25 per cent solutions in the treatment of ophthalmia neonatorum. The use of powdered dionine he considered too drastic; not only was the reaction severe but there had been in one case he had seen a severe reaction of the patient against his doctor! He confirmed absolutely the conclusion of the President as to the uselessness of high frequency currents, or any other electrical current in optic atrophy. In one case, however, he had seen some success from intramuscular injections of succinimide of mercury, but it was rash to draw conclusions from one case.

Major H. Gidney, I. M. S., considered dionine of great value in corneal opacities, the chemosis it caused need not alarm one. Fibrolysin he considered, after an extended trial, useless. He emphasized the necessity of restricting the use of the cautery to the advancing edge of pneumococcal ulcers of the cornea, and leaving the central portions, which had been shown to be free of organisms, untouched.

Major G. H. Fink, I. M. S., commented upon the use of carbon dioxide when in solution in water. It had been proved by Hankin of Agra to be destructive of organisms.

Dr. G. A. Berry, in reply, said he had been interested to hear of the use of carbon dioxide snow: as a manager of the Edinburgh Infirmary, he looked upon new remedies from an economic point of view, and heavy expenses they had anticipated by the requirement of radium had been obviated by the advent of the snow.

Regarding the possibility of cure or retardation of optic atrophy, he believed that those cases in which improvement was believed to have been effected by treatment were really retrobulbar neuritis, and of the same order as those described by Graefe in 1850 as *amblyopia sine causa*.

Dr. Morton replied to some questions concerning the use of carbon dioxide. As regards the sensations of the patient, they experienced at the moment of the application a slight burning feeling, there was more sensation at the time of thawing out, but neither of these sensations were discomforting.

#### **"The More Chronic Forms of Anterior Uveitis."**

The discussion for the day was introduced by Mr. T. W. Holmes Spicer (London), and Mr. Stephen Mayou (London) on "The More Chronic Forms of Anterior Uveitis." The extra ocular manifestations were dealt with by Mr. Spicer.

He remarked it was curious that the same subject had been dealt with by Professor Fuchs, of Vienna, at the last London meeting of the association. He would exclude the evanescent type of episcleritis described by Fuchs, and also pustules beginning in the conjunctiva, which were local affections, also gumma of the ciliary region spreading externally. That left him scleritis and episcleritis. Text-books distinguish between episcleritis and scleritis; there was no essential difference between them, save the variation in incidence with the time of life, and the severity of the inflammation. So far as their connection with uveitis was concerned, that depended on the depth and intensity of the inflammation. He found two types of scleral nodules, one hard, and one raised, which on incision proved to be mostly solid, though occasionally a head of pus was found within. The second type presented a boggy undermined condition, the surface was blue, soft and yielding. Some cases began as a vesicular eruption. Considering sex and age incidence, he gave figures from 55 cases. Of these, 15 or 28 per cent were in males; 40, or 72 per cent, females. The difference was striking. As to the liability of the eyes to inflammation, the right appeared most frequently affected, but he thought there was little in the observation. The decades of maximum incidence proved to be between 20 and 40 years, but in considering this, it had to be borne in mind that the duration of the cases was long; it might extend to 15 years. The features of corneal invasion were of interest; he noted the occurrence of

crescentic areas of infiltration separated from the patch of scleritis by a band of clear cornea; these crescents had their concavity towards the limbus. When there were frequent attacks of scleritis in different parts of the eye, a complete ring of these small crescents might result, simulating arcus senilis. He thought they were due to obstructed lymph circulation in the cornea. He had observed similar crescents capping fascicular ulcers. The invasion of the inner parts of the eye was due to extension of the poison: cyclitis, iritis, and opacities of the cornea were evidence of the severity of the inflammation. Coming to aetiology, he found evidence of rheumatism in 24 of the cases, and a definite absence of it in 26. Indigestion and constipation and pyorrhœa alveolaris were exceedingly common in the affected, but were these not common in most hospital patients of this age and sex?

The preponderance of females suggested the possibility of disease peculiar to female organs; but the most careful examination of many cases brought no evidence of this. The most certain thing was that the subjects were young women of sedentary habits; milliners, dressmakers, and the like. Dealing with pathological features, section of nodules showed no evidence of tubercle. Cultures were most often sterile. In one where the staphylococcus aureus was isolated, a vaccine was prepared, but it proved useless. Von Pirquet's reaction was tried four times; two were positive, and two negative. In the positive cases, tuberculin injections were made. Both recovered, though no striking changes in the scleritis appeared after the injections. Three cases were examined for syphilis by the Wassermann test, and all were negative.

As regards treatment, he had excised nodules in nine cases, with varying results: on the whole, he thought well of it. He suggested incising the patch and touching it with carbolic acid. Injections of cyanide of mercury had proved useless. Iridectomy had been done for secondary causes; in one case the scleritis recurred four months later; in another, not for several years. Hot vapour baths were very good during attacks, but did not prevent recurrence. It was too early to estimate the value of ionization; he found the reaction severe. It tended to increase the severity of the attack, but one case appeared to be improved. He was inclined to consider it too painful. Salicylic ionization seemed much more pleasant. In his opinion the disease was toxic; i. e. not due to a local organism; and he based his opinion on the absence of or-

ganisms in the nodules. He thought it was a local thrombosis, something like a chilblain, not that it was a cold-weather disease, or that warmth was a great factor in relief. It was a toxic thrombosis, and possibly the manifestation of tubercle in other parts of the body: yet it was not limited to tubercle. At present they had no means of distinguishing these toxins.

Mr. Stephen Mayou (London) dealing with the intraocular manifestations of chronic anterior uveitis, said he purposed considering the bacteriological aspect. He had investigated 38 cases. Of 30, where there was good evidence of the cause, tubercle accounted for 15, staphylococci for 10, and syphilis for 5. Apart from wound of the globe the infection must be by the blood system, and from some other focus elsewhere in the body. That organisms caused uveitis directly had been demonstrated, but there is no evidence of toxins producing similar effects. Tubercular affections of the lungs and glands, pus infections of teeth, boils, and leucorrhoea, and possibly disease of the gut, were common foci. Chronic middle-ear disease had also been held responsible. He looked on these affections as a chronic pyaemia, and held that this accounted for the cachexia so common. All his septic cases had been in females. So far as they could distinguish the clinical symptoms the character of the keratitis punctata varied with the organism. In staphylococcal and syphilitic cases it usually consisted of a cloud of fine dots, whilst in tubercle the spots were large like mutton fat. This distinction was probably due to differences in agglutination.

The changes in the iris were essentially atrophic, following vascular sclerosis. The occurrence of cataract secondary to the inflammation was probably due to toxic effects upon the lens epithelium, and loss of protection from aqueous absorption. Choroiditis when anterior was probably due to spread of the disease; isolated patches posteriorly might be separate foci. The increase in tension sometimes noted was likely to be due to two causes: altered secretions, and altered osmosis through the diseased hyaloid. Low tension he found in one case due to the shrinkage of the vitreous. Iritis adhesions were less common with staphylococcal forms. Vitreous opacities were slight in tubercle, always present in syphilis, and most marked in staphylococcal. The determination rested, however, on specific tests. V. Pirquet's reaction was of doubtful value. Of the Wasserman reaction he had little experience as yet. The local reaction on the eye following injections of

toxin into the blood was most valuable. In 48 hours there was increased ciliary injection, K. P., and vitreous opacity. The patient noticed the loss of vision. Choroidal patches became oedematous. Bacteriological examination of the aqueous was the only certain process. Smear preparations were no use. Inoculation of the aqueous into animals would alone give positive results with tubercle. Inoculation of the aqueous on to blood serum was sufficient in staphylococcal cases. As regards treatment paracentesis had been established as a most beneficial measure; it allowed the site of the lesion to be drained, and then flooded with blood serum containing protective bodies. He did not hesitate to repeat the operation.

Vaccine treatment he found of great value; and whenever possible the vaccine was prepared from the patient's own organism.

The President said it did not appear they had made much advance as regards treatment with the exception of the tentative use of vaccines. He confirmed Mr. Spicer's observations on the peculiar corneal marking left after scleritis. In his experience irido-cyclitis and kerato-iritis were much more common in young women and in hospital cases. In six recent private cases four had given a positive Wassermann reaction, and one other he thought syphilitic.

Mr. A. W. Ormond (London) said the possible causes of irido-cyclitis were almost numberless, syphilis, acquired and inherited, gonorrhoea, rheumatism, tubercle, malaria, leprosy, dental caries, and Bright's disease, were well recognized causes. In other cases the cause was not discoverable. Ramsey had suggested that faulty metabolism was at the basis of them, and he thought auto-intoxication from the gut might have a determining influence. It was, however, more likely the affection was due to organisms acting directly than toxins acting from a distant focus. In this connection the examination of the blood was important. In three recent cases of sympathetic ophthalmia this had been done by Dr. Price Jones. There was a tremendous increase in the percentage of mononuclear leucocytes. It reached 16 per cent to 20 per cent instead of the average 2 to 4 per cent. This suggested a protozoal infection and not a bacillary.

In treatment of irido-cyclitis he strongly urged paracentesis and irrigation of the anterior chamber with normal saline solution.

Dr. W. H. Brailey (Brighton) quoted a case of unioocular

irido-cyclitis which was probably due to the sting of an insect on the side of the nose. He commented on the difficulty in obtaining certain evidence of rheumatism; and the fallacies of statistics as indicative of the prevalence of any chronic disorder in males and females, owing to the fact that men did not trouble so much about these conditions.

Dr. R. A. Reeve (Toronto) commented upon a case of homolateral irido-cyclitis consequent on follicular tonsillitis. First one side of the throat was affected and the corresponding eye; later the other side of the throat and the other eye. He had frequently noted correspondence of tonsillar affections with the eye inflammation.

Mr. Hill Griffith (Manchester) said that when using the cautery in cases of scleritis he had found pus in some of the nodules; he thought solid nodules were rare. Commenting on the peculiar corneal scars left in scleritis, he asked if they were analogous to the white corneal lines so frequently seen in dermoid of the limbus. In some cases the interval between the attack of the two eyes extended to many years. He noted that Mr. Mayou accepted the explanation of the occurrence of keratitis with solitary patches of choroiditis he had put forward some 23 years ago.

Dr. G. A. Berry (Edinburgh) said the proof of toxic origins of inflammation was much more difficult than the detection of the presence of organisms, and this should have some influence in our judgment of difficult cases. He thought that tubercular irido-cyclitis had many features in common with sympathetic ophthalmia; the latter might almost be analogous to a malignant form of the former.

As regards staphylococcal infections, he was strongly of the opinion that the soil in which these were found as apparently causal agents was prepared by tubercular infections elsewhere. He agreed in the preponderance of cases in women, but he would put the percentage as high as 90 per cent.

Mr. N. Bishop Harman (London) said that with the aid of Dr. Bernstein he had investigated a large number of eye cases by Wassermann reaction. He was much impressed by its reliability. Citing the case of a large family of which only two members remained, both these women suffered from forms of chronic uveitis, one had scleritis during 20 years, the other posterior inflammation. With the introduction of the test they were each examined

twice and gave a positive reaction. Another woman with granuloma of each iris and the "mutton fat" variety of K. P. had been thought to be tubercular, but the Wassermann reaction was positive, and mercurial treatment proved much more beneficial than tonics. It must be borne in mind that the test only signified a general taint, it did not prove that a given lesion was syphilitic for this, the test must be standardized. His experience of paracentesis was most happy, and in this connection it was of great interest to read the ancient experiences of Wardrop.

Dr. Cecil Shaw (Belfast) expressed his approval with Mr. Spicer's views that many of the cases of sclero-keratitis were toxic. He had been struck with the number of patients who seemed otherwise healthy, but who lead sedentary lives without sufficient open-air exercise, e. g., domestic servants. As regards foci of infection in uveal inflammation he thought the nose should be carefully examined, as it was probably a frequent source of septic infection. Mr. Mayou had referred to boils as primary foci, but he thought both boils and the eye infections were secondary.

Mr. Holmes Spicer and Mr. Stephen Mayou replied.

### **"The Operative Treatment of High Myopia."**

Dr. A. Hugh Thompson (London) read a paper on "The Operative Treatment of High Myopia." He discussed operative procedure, the degree of myopia justifying the operation; and the age at which it is most favorable. He did not consider that operation checked the progress of myopia, so that it might be done for a less degree in the young than in the old. Much choroidal degeneration contraindicated the operation, but this was not more likely to take place after an operation than before. The conditions of the second eye had to be taken into consideration. There was no use operating if the other was emmetropic; then they could not take the risk if the other was seriously diseased. He then gave the visual and after-histories in 20 cases he had operated upon. These required altogether 65 operations. Distant vision was improved in 17 cases; in 10 it was better without a glass than it had been before with glasses. Of the three failures, one developed a thick cyclitic membrane. One was a brilliant success for five years, then had grave cyclitis, and the third had a macular hemorrhage eight months after operation. He did not think that the operation caused any serious increase of liability to detachment of the



retina. The liability was perhaps enhanced if vitreous opacities were present before operation, or if much vitreous was lost at the operation. If the operation had a bad influence he would expect it to be exerted within a year of its performance.

Mr. Charles Wray (London) said he found that recent statistics confirmed results he published some years ago, that the removal of the lens did not stop the progress of the myopia. He thought the operation seriously increased the risks of blindness, and cited three cases of young subjects whom he had recently seen quite blind.

Mr. Hill Griffith (Manchester) said he had operated upon 40 or 50 cases, and in no case had the eye been lost. He did free decision followed by suction. He never attempted the operation unless No. 1 Jaeger type could be deciphered. He did not think the operation induced detachment of the retina unless acute cyclitis followed, and this might occur in any extraction, infantile or senile.

Major Gidney said his experience of the operation was satisfactory. Dr. Thompson replied.

#### **"The Method of Enlarging Certain Forms of Contracted Socket."**

Mr. Arthur H. Benson (Dublin) read a paper "On the Method of Enlarging Certain Forms of Contracted Socket." He entered a plea for the more extended use of mucous membrane from the mouth as grafts instead of skin and epithelial flaps as plastic operations. The floor of a shallow socket was split longitudinally, and the gap left in the conjunctiva lined with a flap from the inside of the lip. The flap was sutured in place, and the socket then packed with pellets of cotton wadding impregnated with xeroform, so as to put the lids on the stretch, the whole being bandaged firmly and left for two or three days. He said that mucous grafts were extraordinarily tolerant of removal and transplantation, that no elaborate precautions were necessary as with skin grafts. Further, the membrane of the lips being educated to withstand pressure of teeth, would tolerate the pressure of a shell.

#### **"The Conditions Which May Account for the Greater Prevalence of Cataract in India."**

Lieut.-Col. L. J. Pisani, I. M. S., read a paper on "The Conditions Which May Account for the Greater Prevalence of Cataract in India." From an examination of the statistics of cataract

operations performed in Government and State institutions, it appeared that cataract was twice as prevalent in the Northern provinces as it was in the lower and Burma provinces. Comparing certain provinces, the difference was intensified, and incidence four times greater for the Northern provinces was found. Next he examined the climatic conditions of these provinces, and showed that they were marked by intense light and glare, both from direct sunlight and reflection from the bare soil; and also by great dry heat. He discussed the influences of intense light, and the influence of heat in the production of cataract. So far as experimental work had been conclusive, heat effect seemed more likely to cause cataract than light. The food factor he thought of little influence, for the whole of the common people in India lived on similar food. The ultra-violet rays did not seem to exert serious influence, seeing that cataract was less prevalent in mountainous regions where the rays abound.

It was possible, he concluded, that one form of cataract might be produced by different causes, but that in any case a senile lens was a necessary condition. It was at the time of failure of accommodation that the liability was greatest. On the whole, he thought the prevalence of cataract in India was mainly attributable to exposure to prolonged intense dry heat which affected the aqueous, and secondarily the lens.

Mr. Charles Wray (London) said the relation of humidity to cataract was in confirmation of his observations that cataract in England was most frequent in abnormal water drinkers.

Major Gidney, I. M. S., thought the essential factor in the production of cataract was premature senility, and climatic influences were of little consequence. He said little reliance could be placed on official statistics of cataract extraction because they took no account of the enormous number of cataracts which were daily operated upon by quacks.

Mr. Angus Macgillivray (Dundee) said he had a considerable knowledge of Anglo-Indians engaged in the jute trade, but did not find a residence in India increased their liability to cataract.

Colonel Pisant replied that the jute trade was carried on in the moistest part of India, where cataract was less prevalent.

Mr. Cecil Shaw (in the chair) said that reference should be made to the recent report of the Belgian Ophthalmological Society into the causes of accidental injuries to the eyes by elec-

tricity. There was an admirable summary of the influence of extreme light effects, and there appeared a large number of cataract cases.

**"Five Months' Work in Luxon in 1910."**

Mr. A. F. MacCallan, Chief Ophthalmic Inspector in Egypt, read a paper on "Five Months Work in Luxon in 1910." He sketched the arrangement now existing for the treatment of eye disease in Egypt, and gave some statistics of the incidence and variety of disease. One of the branches of their work was the inspection and treatment of school children in certain towns. Ninety-six per cent suffered from trachoma. Three years' work in one school had reduced the proportion to 43 per cent. Besides combating trachoma, much work had been done in cataract extractions and in relief of glaucoma.

**"The Diagnostic Values of Ophthalmoplegia, Partial and Total."**

Dr. Risien Russell (London) opened a discussion on "The Diagnostic Values of Ophthalmoplegia, Partial and Total." Paralysis of ocular muscles had always been regarded as one of the most reliable signs of organic diseases, as opposed to the functional affection of the nervous system, and he saw no reason to question the correctness of that view. A transient diplopia might suggest a functional origin, but there was much to suggest the possibility of their being organic and early manifestations of grave disorders, such as disseminated sclerosis. Both paralysis and spasm of muscles had to be considered; failure to do this would cause error by overlooking myotonus, a characteristic of Thomsen's disease. On the other hand, a definite paralysis was an invaluable aid in distinguishing such similar affections as neurasthenia and myasthenia. In the former it was absent, in the latter it was a recognized feature. Paralysis of eye muscles excludes not only functional disorders, but many organic disorders of the nervous system, such as subacute combined degeneration of the spinal cord and the ordinary varieties of peripheral neuritis, in contrast to disseminated sclerosis and tabes. The importance of ocular paralysis as a diagnostic feature of intracranial tumour could not be overestimated, yet in this connection the rare condition of migraine ophthalmoplegique had to be held in mind. The localization of intracranial tumors was aided by consideration of the ocular paralyses. As regards the weight to be attached to mode of onset and progress of the paralysis,

he said that sudden onset did not necessarily imply vascular lesion and contraindicate sclerosis. Experience proved the contrary. He did not think much reliance could be placed on the combination in which ocular muscles were affected in distinguishing lesions of the nuclei and those of the nerves. He had experience of clinical symptoms pointing to central lesion which were in reality due to peripheral affection. Combinations of ocular paralyses had their value, but they must not be too rigidly insisted on. Lastly, he urged the importance of making a thorough general examination of the patient before ever one was justified in making a diagnosis from what appeared to be the most conclusive ocular symptoms. Examination of the blood, of cerebro-spinal fluid, and of specific tests, such as Wassermann's, were necessary correlations. Syphilis was the cause of many of these lesions, yet the fact that they improved with anti-syphilitic remedies was not certain proof of such a primary origin of the affection.

The President said he had always looked upon these ocular paralyses as indications of grave disease, and he was accustomed to warn patients' medical advisers to that effect; yet subsequent events did not bear out that prognosis always, at any rate for many years.

Mr. L. Vernon Cargill (London) continued the discussion. He took for granted the certain diagnosis of ophthalmoplegia, and the exclusion of such functional causes as refraction concomitancy, and hysterical causes. There were cases of the gravest organic disease where diplopia was not manifest, such as in the conjugate paralyses of cortical and subcortical lesions, and replaced by vertigo and false or excessive projection of the paralyzed side. It was also absent in cases of double ophthalmoplegia externa, the patient moved the head instead of the eye, and he might be unaware of the defect. It very frequently happened that the oculist was the first to detect the oncoming of serious nerve disease by the discovery of pupil derangements, and in this connection they must be prepared to undertake a thorough general examination of such patients, or hand them over to the neurologists. The history of the oncoming diplopia was of the greatest value in determining its importance, and although this might be complicated by symptoms that were obtrusively hysterical, that did not disprove the presence of an organic lesion: hysterical symptoms could be distinguished by their "dissociated" character, and the greater affection of direct and voluntary movements. History was of importance in distinguishing

paralysis from mydriasis, myosis, trauma, and post-diphtheritic influences. They had always to be on their guard against fixity of pupils from old inflammation. Occasionally by such means alone a diagnosis could be made: further, intraocular examination might afford valuable help, tubercular or syphilitic mischief, retinal arterio-sclerosis, or dietetic or renal retinitis might be detected. The presence of papillitis or primary optic atrophy might shed a flood of light on the accompanying ophthalmoplegia. There might be orbital tumors or signs of old injury. There were cases of isolated ocular paralysis, mostly of the external rectus, which appeared due to rheumatism; there the neuritis was probably similar to Bell's paralysis. He had notes of two cases where paresis of the superior oblique was accompanied by pain at the pulley, and probably indicated a fibro-synovitis. He asked if rheumatic myositis or fibrositis might not pick out an extraocular muscle and be indicated by local pain on movement, with tenderness or even slight oedema: these cases cleared up readily with suitable treatment.

Dr. E. Farquhar Buzzard (London) dealt particularly with the pupil phenomena of ophthalmoplegia. The value of the Argyll Robertson pupil in the diagnosis of syphilitic disease could hardly be overestimated, notwithstanding that a satisfactory anatomical explanation was wanting. He then dealt with two cases of women who suffered from paroxysmal headache of great severity, vomiting, and some degree of optic neuritis, where pupillary symptoms were marked. There was inequality, and failure of reaction to light. Post-mortem, there was found in each case a small cyst within the third ventricle. From these and other cases he concluded that failure of the pupillary light reflex was a valuable sign of gross disease in the third ventricle, or in the structures immediately surrounding it, and that it not infrequently constituted the first localizing evidence of that disease. Further, they must remember that the light reflex was only lost in actual eye disease when it reached to optic atrophy: it persisted even in severe papillitis. Failure of the light reflex indicated grave disease, deep-seated and central. When tumor was suspected the possibility of operation was totally excluded, since the lesion was too deep for eradication. Decompression might, however, be resorted to.

Dr. W. B. Warrington (Liverpool) commented upon the occurrence of apparently simple cases of single ocular muscle paralyses without indications of grave general disease.

Mr. N. Bishop Harman (London) said he believed that there

were many cases of single muscle paralyses which were due to exposure to unusual extremes of cold. He had heard no reference to them in the able papers of the neurologists. Mr. Cargill indicated that he recognized rheumatic cases. He could only suppose that these cases did not come into the hands of the neurologist, or else were they to conclude from such a warning as Dr. Russell had given that these were all precursors of grave disease such as disseminated sclerosis? Mr. Harman instanced the case of a man who had been exposed throughout the whole day to a cold east wind on a motor boat, so that he felt ill. The succeeding day he awoke with diplopia due to paresis of one external rectus. There were no other symptoms, and good evidence against syphilis. Was it not more likely that such a case was a genuine peripheral neuritis, similar to Bell's paralysis, rather than a precursor of grave disease? He concluded that these cases did occur, and fairly frequently. Acting upon this view, he discarded anti-syphilitic measures, and prescribed strychnine. In the case he instanced, cure was established in three weeks. To view such cases gravely, and to give serious warning to the patient or his medical attendant was to court trouble.

The president said he doubted if these cases ever got to the neurologist; to him the diagnosis was established in that they got well.

Dr. R. A. Reeve (Toronto) concurred in the influence of exposure to cold causing isolated paralyses; often he found evidence of deep-seated pain.

Miss Amy Sheppard (London) said she had seen similar cases, and obtained evidence of tenderness in the region of the affected muscle.

Mr. A. W. Ormond (London) questioned whether the cases really got well. Was the relief only temporary? And if exposure could be credited with the occurrence why were these cases not more frequent?

Mr. Angus MacGillivray (Dundee) said he agreed with Mr. Harman in the existence of the cases. But he found that six weeks was the usual duration. He gave a guarded prognosis until the six weeks was up. If in that time the paresis had not passed, he considered the prognosis was grave, and indicative of ultimate central disease. He had not found local pain in the temporary cases, but he was sure syphilis was not a necessary factor; further, some of these cases he had watched for twenty years and more, and there had been no recurrence, and no subsequent grave effects.

Mr. Hill Griffith (Manchester) asked if Dr. Russell made use of electrical reactions as an aid to diagnosis. He had seen several cases, and he had had them under observation for many years, where monocular mydriasis occurred without other symptoms. To what lesion could such uncomplicated stationary paralysis be due?

Dr. John Hern (Darlington) said he had seen many cases of paresis of an external rectus of one eye, such as Mr. Harman had described, and had watched them for twenty years afterwards, and they had not recurred. It was apparently a peripheral lesion, and should be treated as such where there were no other indications of a central lesion.

Major Gidney, I. M. S., said these cases should present no difficulty if syphilis was excluded by the Wassermann reaction.

Dr. Risien Russell, in reply, said the observations concerning the pupil reaction by Dr. Buzzard were of the highest importance. Regarding the question of the occurrence of single paralyses due to cold, brought up by Mr. Harman, and confirmed by so many speakers, he agreed that such cases did occur, and cited one recently seen in an engine driver, in whom cure resulted in three weeks, to his great surprise. Yet their opinion had to be determined on the general question by subsequent history. Mr. MacGillivray and Dr. Hern had watched cases for twenty years, and that gave conclusive evidence. On the other hand, there were many cases of disseminated sclerosis in which history of early single and transitory paralysis was obtained. The presence or absence of syphilis did not prove the point, though it had an important bearing.

### **"The Education of High Myopes."**

Mr. N. Bishop Harman (London) read a paper on "The Education of High Myopes." The action of the ophthalmic surgeon in regard to these cases was one of difficulty, especially in London elementary schools, with their huge number of children. It was common to give negative injunctions. Reading and writing were prohibited; sometimes school was prohibited. These negations did not solve the difficulty. Besides, they were inoperative or injured the child. The prohibition of school was a real injury; school nowadays was a good place where lasting advantage was gained. To stop a child who could read from reading was next to impossible. He then outlined a scheme which was being put into operation in London by the establishment of "myope classes," which he thought would go far to solve the difficulty. The curriculum in these classes

was divided into three portions, oral teaching, handicraft, and literary work. The first and most important was taken in company with the normal-sighted in the ordinary school; no books were allowed, and here the main part of their mental instruction was obtained. The other sections were carried on in special classes. Every sort of handicraft that developed feeling rather than sight was practiced. And lastly, such knowledge of the ordinary means of communication as they must know was taught by writing free-arm fashion on blackboards. By this means they hoped to train the children in such habits as would spare their eyes undue strain. The success of the work depended upon the intelligence of the teachers. He then showed the desk furniture he had designed for us in these classes. The desk gave to each child its own table for manual work, and a large blackboard for such writing as was taught. The desk was lent by Messrs. George Hammer, of London, for the occasion.

**"A Plea for Efficient Drainage After Cataract Extraction."**

Major G. H. Fink, I. M. S., read a paper entitled "A Plea for Efficient Drainage After Cataract Extraction." He favored the use of adhesive plaster dressings after operation. These dressings were particularly useful in preventing patients from handling their eyes and so damaging the tender globe. In cold weather a dry dressing was used, in hot weather a moist one. To obtain the best effects of the dressing, it was necessary to secure free vent of tears or discharges, and this was obtained by inserting a thin rubber tube into the lower conjunctival sac, the ends projecting from the dressing, and through them irrigation could be performed.

Major Gidney said he did not think well of the procedure. Irrigation after extraction was likely to damage the tissues and prevent healing by first intention.

The following resolution was then brought forward by Mr. Bishop Harman: "In view of the importance of obtaining continuity of treatment of defects of vision in school children throughout the period of education, and of proper co-ordination of medical inspection and treatment, it is the opinion of the ophthalmological section of the association that the organization of school clinics is desirable." In proposing the motion, Mr. Harman said that the subject was being agitated in municipal circles, but they had no concern with that: they were interested in the medical aspect. As members of the association, they would not be content with any



scheme of treatment that did not fairly remunerate the services of the doctor to the state. Attempts had been made to throw the whole work on the voluntary hospitals, but it failed, as they had not the necessary means of coping with such a huge mass of work. Now various schemes were in process of trial, private and public school clinics had been founded in some places, in London some hospitals were subsidized to do the work. Of the principles concerned in the latter arrangement he would say nothing, but the defects of the arrangement were fair comment. One effect had been that children were refused treatment at many hospitals without school "vouchers" certifying payment. Further, the present arrangement with hospitals entailed an altogether unnecessary loss of time and labor on the parents; it was provocative of ill-feeling and distaste for treatment. A matter of great concern to them from the scientific side of their work was the means of obtaining knowledge of the causes of defects of vision, or the influences that accentuated them. This they could get by a properly organized scheme of clinics covering definite areas of population, but it was impossible when parents went haphazard to any hospital. It was only by developing this valuable side of their work that they could exert a proper influence in the prevention of disease.

Mr. Walter Edmunds (London) seconded the resolution. He said they ought to recognize that this question affected the great majority of the children of the country, since 86% belonged to the elementary schools, 10% to Poor-law schools and orphanages, and only 4% to private schools. Medical inspection was wasted without arrangements for treatment. He thought arrangements with hospitals were unsatisfactory, for the permanent staff was not large enough, so recourse was had to clinical assistants who were not always experienced. The alternative was school clinics. The resolution did not state how it was proposed these should be worked. He made some suggestions on the point, but said that did not affect the main issue.

Dr. Hugh Thompson (London) said it did not matter who did the work, so long as it was properly done and properly organized. There was ample room for voluntary aid and for public work. He detailed the work of a voluntary school clinic which had been worked by him in Woolwich for the past three years; it was a complete success.

Dr. J. A. Menzies (Rochdale) said the matter had already been settled in Rochdale by the establishment of a school clinic by the

education authority. The hospital did not consider it fell within the scope of their charitable work. The children who were found by the medical inspector to require eye treatment were later seen by the ophthalmic surgeon in a convenient room, and the work was done on the spot. Cases requiring operative treatment were referred to the hospital. The matter had been arranged on business-like lines, and it was a success.

Mr. Angus MacGillivray (Dundee) thoroughly agreed with the motion. He further commented upon the qualification required of candidates for posts of school doctors. They were expected to hold the D. P. H.; that meant they knew everything about bakeries, sewage, and L. G. B. laws, but nothing about schools or school children.

Dr. Beatson Hird (Birmingham) supported the resolution. In Birmingham, he said, some of the treatment was being undertaken by the school doctors, and it did not seem satisfactory; special men were required. He then described the working of the school clinic which had been established in a small rural district. The defective children were examined on Saturdays in the schools, the parents paid for the glasses, and a small sum for treatment in penny contributions. The work had been done for two years, and was an illustration of effective organization.

Dr. Hern said that at Darlington attempt had been made to throw this work on the hospital, but, with the help of the association, the attempt had been foiled. It was not necessary they should settle details at this time, the principle of the clinic was the point.

Dr. Philip Brooks (London) said that before he could support such a motion he must know what a school clinic implied. He was opposed to gratuitous work of this kind: but he was opposed to building new and expensive state hospitals for school children.

Dr. Hill Griffith (Manchester) said that in Manchester and Salford they had an extraordinary divergence of practice. These places really formed one city; yet in Manchester the work was thrown on the charitable hospitals, but in Salford a properly paid ophthalmic surgeon had been appointed to do the work in the schools. The matter really rested with the governors of hospitals; they had the control.

Dr. Haldane Cook (Enfield) called attention to the association's pamphlet No. 25 on this subject. There would be found a

scheme for the working of local school clinics which seemed to promise satisfaction.

Mr. Charles Wray (London) said that at Croydon he did the work for the education authority. They had fitted up a room which was really a school clinic, and it was satisfactory.

Dr. R. E. Harecourt (Liverpool) agreed with the resolution.

Dr. R. Leslie Ridge (Enfield) said the establishment of school clinics would do much to aid the prestige of the profession. It was bad to educate the public to rely upon the hospitals.

The president said there could be no doubt some organization was required. He always objected to seeing school children at hospital. The difficulty was acute in rural districts where special treatment was impossible at present. He read letters which a local authority sent to those who failed to get the vision of their children treated. They were told they were liable to a fine of £100 or two years' imprisonment! This notice had been sent to a woman whose husband had left her and who kept herself and three children on 12 shillings a week. The whole thing became ludicrous in such circumstances.

The President then put the motion to the vote, when it was carried with one dissentient. There were about 35 present.

The meeting concluded with a vote of thanks to the president of the section.

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The examination of fifty general paretics confirms my former statement that optic atrophy and ocular muscle paralysis are comparatively rare in general paresis as compared to their frequency in tabes; nor, again, are the muscular paralyses permanent, as a rule. Clinically, this would seem to mark out the two diseases as distinct. In the fifty cases only two had optic atrophy and none any third nerve lesion outside of the Argyll-Robertson pupil. In the cerebral type of general paresis, that is, those cases of exaggerated reflexes, the Argyll-Robertson pupil is often absent in the early stages. Among over 200 cases of general paresis only one presented a history of tabes extending over a number of years preceding the mental symptoms with lightning pains, crises and ataxia.—Edward D. Fisher, M. D., *Journal of A. M. A.*

## News Items

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Personals and items of interest should be sent to Dr. Frank Brawley, 72 Madison Street, Chicago.

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Dr. Thomas D. Edwards, an ophthalmologist of Union City, Tenn., died recently in that city, aged 54.

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Dr. Mortimer Frank has received an appointment to membership on the Chicago Public Library Board.

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The Graefe Prize has been awarded to Dr. Stock for his work on tuberculosis of the eye and chronic iritis.

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Dr. Wm. T. Shoemaker of Philadelphia has removed his office to his residence, 109 South Twentieth Street.

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Dr. Edmund Burwell has been appointed ophthalmologist to the staff of the City Hospital, Seattle, Wash.

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Dr. A. O. Griffin of Ann Arbor, was a recent visitor in Chicago, where he spent a few days before starting south.

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Dr. Wm. C. Bane of Denver was operated upon for appendicitis, and at the last report was in good condition.

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Dr. Traquair has received the appointment of assistant ophthalmic surgeon on the staff of the Leith (England) Hospital.

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The Birmingham (England) Eye Hospital is to receive about \$60,000 from the estate of Mr. Thomas Home of Warwick.

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The eye specimens in the Museum of the Royal College of Surgeons (England) will be revised by Mr. Stephen Mayou.

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The Trachoma Institute of Philadelphia, a free institution, treated 680 patients during August, 240 of which were new cases.

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Dr. Clarence Loeb is ophthalmologist on the staff of the new free clinic recently established in South St. Louis by the St. Louis University.

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At the recent meeting of the West Virginia State Medical Association, Dr. T. W. Moore, a well-known oculist of Huntington, W. Va., presided.

Dr. Henry G. Langworthy of Dubuque, Iowa, has established an infirmary in that city for the treatment of diseases of the eye, ear, nose and throat.

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Dr. Harry S. Gradle, late voluntary assistant at Elschinig's eye clinic at Prague, has associated himself in practice with his father, Dr. H. Gradle, of Chicago.

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The *Wochenschrift für Therapie und Hygiene des Auges* is responsible for the statement that there were 913 ophthalmologists in Germany in 1908, one to every 67,500 inhabitants.

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In Berlin a chauffeur is required to furnish a certificate from a properly qualified physician, showing that he has no physical defects which would interfere with his work, special attention being given to examination of the eyes and ears.

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A new printing press has been invented in Paris by Mr. Vaughan, director of the Hospice National des Quinze-Vingts, a hospital for the blind. By touching the usual letters the machine automatically prints Braille characters. The new press will be a great aid in adding to the Braille publications, which are badly needed.

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The Microscopical Methods of Examination of the Eyes. By Dr. S. Seligmann, Hamburg, Germany. This is the second edition and has been completely revised and much new material added. The publishers are S. Karger, Karlstrasse 15, Berlin, Germany. Price, M. 9.20 (\$3.80).

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The New St. Paul's Eye Hospital, Liverpool, England, was started July 21, by the Earl of Derby, who laid the foundation stone. A special department for the treatment of ophthalmia neonatorum will be instituted as an honor to the founder of the original hospital forty-one years ago, Dr. George Edward Walker.

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The American Medical Association of Vienna has removed its headquarters from the Cafe Klinik to the new club rooms at 28 Schlüsselgasse, opposite the main entrance of the Allgemeiner Krankenhaus, which will be the permanent home of the Association. The club has five large handsomely finished rooms, one room being devoted to the use of the ladies exclusively. This great improvement was due chiefly to the efforts of Dr. C. L. Chambers of Bismarck, S. D., president of the Association.

## BOOK NOTICES.

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THE EMPLOYMENT OF ORBITAL HETEROPLASTY AND PSEUDO-PLASTIC OPERATIONS FOR THE IMPROVEMENT OF OCULAR PROTHESIS. By Georges Bonnefou, of Bordeaux. G. Steinheil, Paris, 1909.

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TREATMENT OF CHRONIC GLAUCOMA (SCLERECTO-IRIDECTOMY AND SIMPLE SCLERECTOMY). By Dr. J. Beauvieux. Bordeaux. Illustrated. Published by G. Steinheil, 2 Rue Casimir-Delavigne, Paris, France. Price \$1.00 (five francs).

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THE TREATMENT OF CATARACT. By Lt.-Colonel Henry Smith, B. A., M. D., M. Ch., Indian Medical Service. With appendix by Captain A. E. J. Lister, M. B., B. S., F. R. C. S., Indian Medical Service. Illustrations by Derrick T. Vail, Professor of Ophthalmology, University of Cincinnati, etc. Calcutta. Thacker, Spink & Co., 1910. (All rights reserved.)

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GLAUCOMA. An Inquiry into the Physiology and Pathology of the Intra-ocular Pressure, by Thomson Henderson, M. D. Surgeon Nottingham and Midland Eye Infirmary, etc. Longmans, Green & Co., Fourth avenue and Thirtieth street, New York. London: Edward Arnold.

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THE REFRACTIVE AND MOTOR MECHANISM OF THE EYE. By William Norwood Souter, M. D., Associate Ophthalmologist of Episcopal Eye, Ear and Throat Hospital, Washington, D. C. With 148 illustrations. The Keystone Publishing Co., Philadelphia, U. S. A., 1910. Price \$2.00. Postpaid to any part of the world.

## IN MEMORIAM.

The Colorado Ophthalmological Society desires to record its full appreciation of the high character and attainments of one of its charter members, Dr. Edmund W. Stevens, whose death occurred in Denver, October 30th, 1910, after a few days' illness.

Dr. Stevens graduated with honors from the Jefferson Medical College in the class of 1884, at the age of twenty-one. He settled in Philadelphia, where his worth won recognition from such men as Weir Mitchell, Jackson and de Schweinitz.

In 1898 ill health caused him to seek the more favorable climate of Colorado, which undoubtedly prolonged his life. His ability as an ophthalmologist, his broad culture, and his social gifts were recognized by the profession and by the public. Bravely he built up another practice, often struggling against, but never complaining of, adverse circumstances. His simplicity of manner, entire frankness, and absolute honesty emphasized his evident ability, in the minds of physicians and patients.

He rendered lasting service to the Colorado Ophthalmological Society, as one of its founders, as its very efficient secretary for two years, and as a constant attendant at its meetings. His discussions were always pertinent, terse, and at times epigrammatic; and were always listened to with marked attention, profit and pleasure. It is not too much to say that each member of the society takes Dr. Stevens' death as an individual and personal loss.

This society feels that, although his medical contributions were highly creditable and valuable, yet Dr. Stevens was even a better ophthalmologist than his writings would show.

For the irreparable loss of the widow, and infant son, of our beloved colleague, this society wishes to express to Mrs. Stevens its heartfelt sorrow and most cordial sympathy.

GEORGE F. LIBBY,  
WALTER HILLIARD,  
DAVID A. STRICKLER,  
Committee.

## CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Patillo (P.-G.) J. F. Burkholder (E. E. N. T.)	G. W. Mahoney (Pol.) Geo. F. Suker (P.-G.) Oliver Tydings (E. E. N. T.) C. H. Francis (Pol.)	E. J. Brown (E. E. N. T.)	G. W. Mahoney (Pol.) Rich'd S. Patillo (P.-G.) J. F. Burkholder (E. E. N. T.)	Richard S. Patillo (P.-G.) Oliver Tydings (E. E. N. T.)	G. W. Mahoney (Pol.) E. J. Brown (E. E. N. T.) C. H. Francis (Pol.)
10 A.M.	L. J. Hughes (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	E. J. Brown (E. E. N. T.)	L. J. Hughes (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)
11 A.M.	Brown Tusey, N.W.U. Every day, 10-12 A.M.					
	H. W. Woodruff (E. E. N. T.)	A. G. Wipperrn (E.E.N.T.)	J. R. Hoffman (E. E. N. T.)	A. G. Wipperrn (E.E.N.T.)	H. W. Woodruff (E. E. N. T.)	A. G. Wipperrn (E.E.N.T.)
1 P.M.		Willis O. Nance (C.C.S.)		Willis O. Nance (C.C.S.)		Willis O. Nance (C.C.S.)
2 P.M.	E. V. L. Brown (Inf.) E. J. Gardner (E.E.N.T.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) D. A. Payne (Ills. Med.) N. E. Remmen (Inf.) Emily Selby (Inf.) Wm. H. Wilder (Rush) •H. W. Woodruff (Inf.) N. A. Young (Inf.) Francis Lane (Rush) E. K. Findlay (P. & S.) •Oscar Dodd (Inf.) M. H. Worthington (Inf.)	•Chas. H. Beard (Inf.) W. Allen Barr (Inf.) Thos. Faith (E.E.N.T.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) F. A. Phillips (Inf.) •Wm. H. Wilder (Inf.) M. H. Lebensohn (P.&S.) S. L. McCreight (C.C.S.)	E. V. L. Brown (Inf.) W. Allen Barr (Inf.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) Wm. H. Wilder (Rush) H. W. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) •Oscar Dodd (Inf.) Thos. Faith (E. E. N. T.) M. H. Worthington (Inf.)	•Chas. H. Beard (Inf.) W. Allen Barr (Inf.) •Frank Allport (St. Luke's) •Frank Brawley (St. Luke's) Thos. Faith (E.E.N.T.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) E. J. Gardner (E.E.N.T.) E. J. Gardner (St. Luke's) •Paul Guilford (St. Luke's) •Cassey Wood (St. Luke's) T. A. Woodruff (St. Luke's) J. B. Loring (Inf.) D. A. Payne (Ills. Med.) F. A. Phillips (Inf.) •Wm. H. Wilder (Inf.) H. B. Williams (Inf.) Francis Lane (Rush) M. H. Lebensohn (P.&S.) S. L. McCreight (C.C.S.)	E. V. L. Brown (Inf.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) Wm. H. Wilder (Rush) H. W. Woodruff (Inf.) N. A. Young (Inf.) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) •Oscar Dodd (Inf.) Thos. Faith (E. E. N. T.) M. H. Worthington (Inf.)	•Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (E.E.N.T.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) F. A. Phillips (Inf.) •Wm. H. Wilder (Inf.) M. H. Lebensohn (P.&S.) S. L. McCreight (C.C.S.)
3 P.M.	W. Allen Barr (C.C.S.) •Wm. E. Gamble (P.&S.)	H. H. Brown (Ills. Med.)	•J. E. Harper (P. & S.) W. Allen Barr (C.C.S.) •Wm. E. Gamble (P. & S.)		W. Allen Barr (C.C.S.)	Geo. F. Suker (P.-G.)
4 P.M.	W. F. Coleman (P.-G.)	C. W. Hawley (P.-G.)	G. F. Suker (P.-G.)	C. W. Hawley (P.-G.)	W. F. Coleman (P.-G.) Brown Puscy (County)	

\*Special operative eye clinics.

## ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 819 W. Harrison Street, E. E. N. T.: Chicago Eye, Ear, Nose and Throat College, Washington Franklin Streets. Clinics all day.	County: Cook County Hospital, W. Harrison and Honore Streets, Ills. Med.: Illinois Medical College, 182 Washington Blvd. Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.	Pol.: Chicago Policlinic and Hospi- tal, 174 E. Chicago Avenue. P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street. N. W. U.: Northwestern University, 2481 Dearborn Street.	Rush: Rush Medical College, W. Harrison and Wood Streets. St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.
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# THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS  
OF OPHTHALMOLOGY

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VOL. XIX CHICAGO, DECEMBER, 1910 NO. 12, NEW SERIES

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## OPHTHALMIC HOSPITALS IN EGYPT.

BY A. F. MACCALLAN, M. B., B. C. CAMB., F. R. C. S., Eng.

Chief Inspector of Ophthalmic Hospitals in Egypt.

(Illustrated.)

Many American travellers in Egypt have seen the white tents of the Travelling Ophthalmic Hospitals, it may have been at Luxor, or on the road to the Pyramids, or in some other less accessible place, and it is to inform them as to the work of the hospitals and perhaps to interest them in their future that this short account of the work has been written.

Before any conception can be formed of the reasons why it is so necessary to press forward the means of ophthalmic relief in Egypt, one must understand roughly the ophthalmic conditions which now obtain in the country.

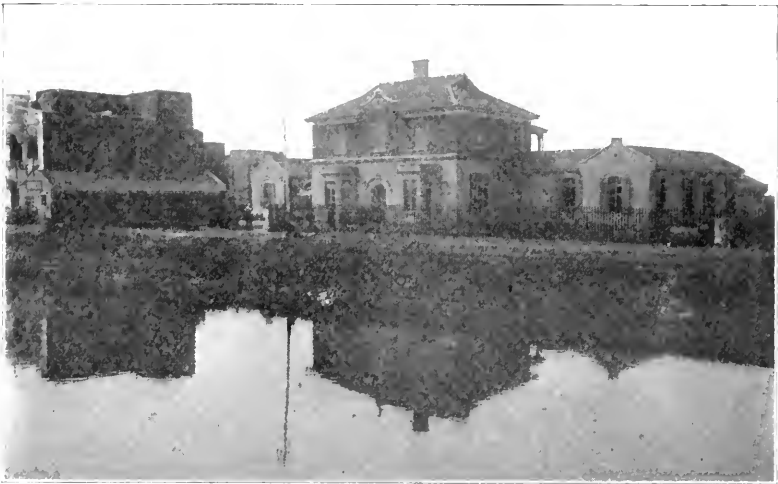
Trachoma, a chronic contagious disease affecting primarily the eyelids, is ubiquitous and affects more than 90 per cent of the population. This dictum is based on regular examinations of the pupils of some of the large Government primary schools and of thirty-seven kuttabs or preparatory schools, where during last year it was found that more than 90 per cent of the pupils showed unmistakable evidence of active or quiescent Trachoma.<sup>1</sup> As the result of experience and local knowledge now extending from one end of Egypt to the other, it may be said that the incidence of trachoma in different places among the middle and lower classes varies very little.

The extraordinary density of the population naturally favors the spread of the disease,<sup>2</sup> this is 939 per square mile and is greater than that of any European country, of which the most densely populated is Belgium with 588 per square mile.

The mode in which the disease is spread is mainly by the fingers; clothing also is a fruitful source of contagion, used as it is indifferently as a mosquito net, a towel, and a protection from the heat or cold.

Acute ophthalmias occur at all times during the year but are more prevalent in the hotter months during the period of increased microbic activity,<sup>3</sup> when the contagion may be fly-borne, although it is probable that it is more commonly digital.

The uncleanly habits of the lower classes, habits in some cases consecrated by custom, and in others aggravated by the difficulty in obtaining water; the crowded huts with crumbling mud walls in which the poorer fellahin sleep together with their cattle; the dust of the streets, unpaved and unwatered except in a few of the larger streets, and continually ground to powder by the trampling



Permanent Ophthalmic Hospital, Tanta, Egypt, under the charge of Dr. Mahomet.

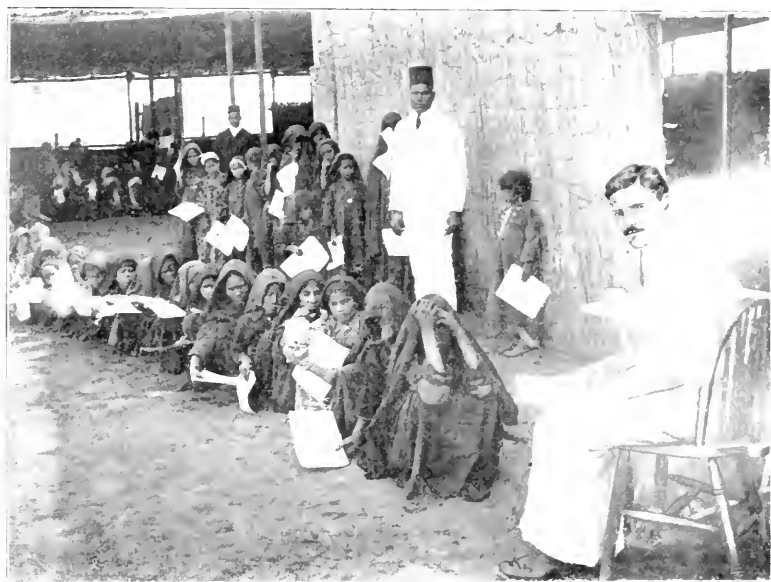
of the cattle, which are daily driven from the huts to the fields; the gales of daily occurrence during some periods of the year, which drive the dust about until it permeates the whole atmosphere, both without and within the most hermetically sealed house; all these are fertile causes of acute ophthalmias.<sup>4</sup>

The occurrence of acute ophthalmias materially assists the spread of Trachoma. A non-secreting case of Trachoma is only slightly infective, but as soon as the secretion caused by the addition of an acute ophthalmia to the chronic Trachoma is transferred to unaffected persons, it may be by the fingers, by towels, or by clothes, trachomatous contagion rapidly spreads.

Trachoma may have various sequelæ, but the most important

are trichiasis and entropion, of which ten thousand cases were seen at the ophthalmic hospitals in 1909; the time at our disposal only enabled us to operate on three thousand of these cases. Trachoma alone rarely causes blindness; this is the effect of the acute ophthalmias. Six per cent of all cases seen by the ophthalmic staff in 1909 were blind in both eyes (1385 in all) and 15.64 per cent were blind in one or both eyes (3501 cases).

The 1907 official census showed that Egypt was nine times as much affected with blindness as the colored population of the most



Luxor—Patients waiting treatment; Surgeon in foreground.

affected state (Idaho) and fifty-five times as much as the average in the United States (1900 census).

### Description of a Travelling Hospital.

Many of those who have seen the travelling hospital this year at Luxor, which was encamped close to the American Mission School on the road to the temple of Karnak, could give a good description of the picturesque crowd of waiting patients.

An acre of land dotted over with large tents of Indian make; the little garden forming a restful patch of green on the brown soil. The large mat shelters erected to shield the patients from



Luxor—Children at the Camp.

the glare of the sun. Under the shelters three or four hundred natives of all sorts and conditions, and of all ages, but all poor. The majority of them are children. Most are animated and interested, pleased to wait as long as is required, for them every hospital day is a fête where they meet their friends and indulge in agreeable converse.

Pretty little girls in gaily striped gowns, filthy babies in the arms of filthy mothers, who will be refused treatment inexorably until the baby's face has been washed by the mother. Boys of all ages. A row of old men squatting on the ground, each of whom is blind or nearly blind with cataract, but all will be operated on for this condition sooner or later.

A sad and silent little group squatting on the ground in front of bowls of sublimate solution, each with two little platters, one containing clean pledgets of cotton wool to dip in the solution, and another to contain them when they have been used for swabbing their eyes. These are the cases of acute ophthalmia of every degree of severity. There is a "sheyal" or porter in a short blue gown, in the prime of life, magnificently built, with ulceration of both cornea and prolapse of the irides, stoically mopping his eyes, miserable but unimaginative and not thinking of his future. There is an undersized little man in European clothes, a katib at the Mudiria, who accompanied by his father, has arrived with a profuse conjunctival discharge; the father beats his breast and scratches his face in grief, for if his son becomes blind and can no longer be an honored servant of the Hukuma or government, who will give his poor father the luxuries he has learned to require, the cigarette and the frequent cup of coffee.

A good looking girl of fifteen with one of her corneæ almost entirely destroyed is swabbing away for dear life. Poor thing, she hopes that her beauty may be preserved, for if not she will no longer be talked of as a prize in the marriage market; so, careless of exposing her features, she carries out her treatment.

The large group of black-robed figures sitting together are women with trichiasis (ingrowing eyelashes), there are twenty or thirty of them; there are twenty or thirty such cases every day; they are easily cured by operation, but the operation for each one takes about half an hour. So that if all the operations were done for this condition alone, without touching all the other cases, the

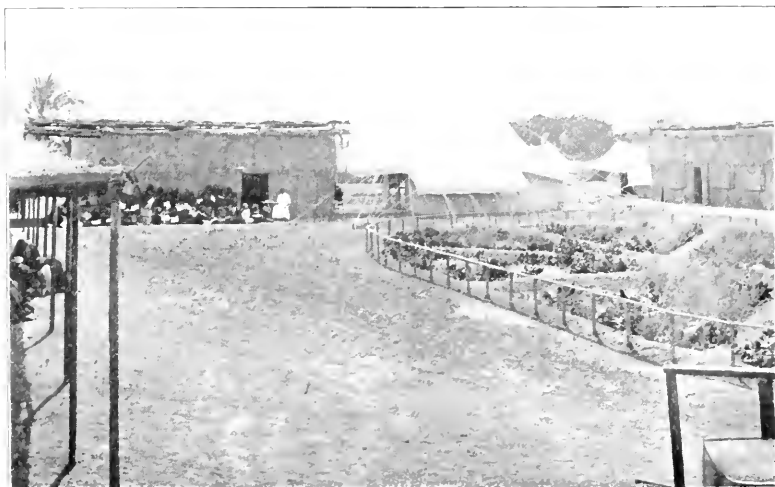
surgeons would operate for twelve hours a day: most of them must therefore be inevitably postponed.

#### **Clinical Work Done in 1909.**

The two travelling hospitals carried on work at Mansourah, Beni Suef, Gizeh, and Luxor. The only permanent hospital at present opened is that of Tanta, which was at work during the whole year.

The traveling hospitals naturally were closed for purposes of transfer from one locality to the other, and one of the hospitals was closed during the summer in order that leaves might be given to the overworked surgeons and employés.

The average number of patients seen per day was 221. The



Traveling Tent Hospital—Luxor.

number of new patients treated was 12,092, each of whom attended the hospital about 14 times: 4,071 of the total number were under the age of fifteen years.

The number of operations performed was 9,930, of which 2,783 were done under the influence of chloroform.

The number of patients seen with ingrowing eyelashes, trichiasis or entropion, was 10,060, but the time at our disposal only enabled us to do 3,128 operations for the relief of this condition, which is not merely painful, but frequently leads to blindness.

The disability caused is such that the fellahin, unable to obtain advice or operation from a skilled surgeon, for there are none avail-

able for the prices they can afford to pay, frequently resort to charlatans to cure them. The operation performed is this: a fold of skin of the upper lid is included between two pieces of reed, the ends of which are tied tightly together to such a degree as to cause eversion of the ingrowing eyelashes. The included skin naturally necroses and falls away, the raw area granulates up, and in a certain number of cases in which the operation was done for the relief of entropion the condition is cured. But trichiasis is much more common than entropion in Egypt; and the majority of people who resort to these quacks, not only are not cured, but with a large piece of the skin of their upper lid removed, they are unable ever to close their eyelids again (lagophthalmos), causing great disability in all cases and frequently resulting in complete opacity of



Luxor - Children being treated.

the corneæ with dire results to vision. One thousand four hundred eighty-one such cases were seen last year.

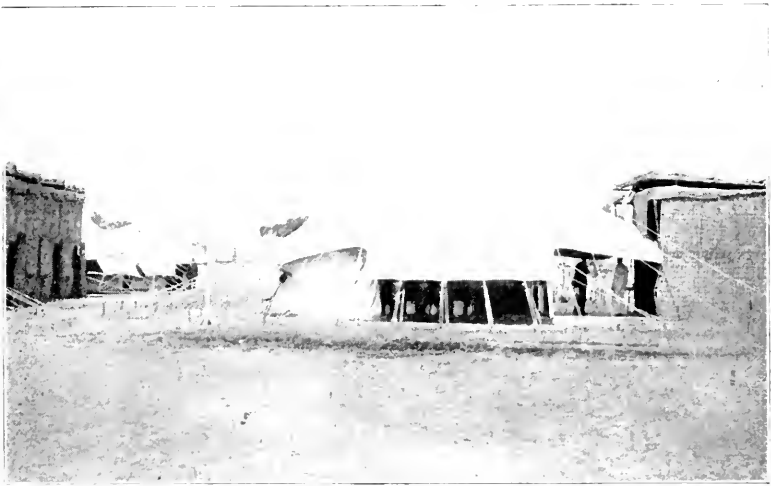
#### **Ophthalmic Staff.**

The regular staff at one of the permanent or complete camp hospitals consists of two Egyptian surgeons, one of whom has spent at least two years learning ophthalmic surgery on the Ophthalmic Hospital Staff after taking his medical diploma at the Government Medical School in Cairo. Two senior ophthalmic surgeons or inspectors, of whom one is English and the other Egyptian, are always in residence at the various hospitals in turn. Frequent

visits are also made by the chief inspector to the hospitals for the general management of which he is responsible.

One of the most important functions of the Ophthalmic Hospitals is to provide clinical teaching for Egyptian surgeons, and this function is, I think, fulfilled with success.

The clerical staff consists of a clerk, a headman of the camp, two trained male hospital attendants and seven servants, including a woman who looks after the comfort of the women in-patients, and a cook to prepare food for all the patients in the hospital, which is provided for them gratis.



Luxor—Operation tent. In the distance hills, on the other side of the river near the Tomb of the Kings.

The regulation period for each travelling hospital to stay in one place is six months, after which it is moved to another place. This is not because the need for the hospital's services is apparently less after six months, but because it is only just to give different places the advantage of the hospital's presence.

It is impossible in most places in Upper Egypt to carry on travelling hospitals in the summer. The heat, the dust and the flies make surgical work unsatisfactory. Therein lies the advantage of permanent hospitals, in which surgical work can be carried on all the year round.

#### **Origin of Ophthalmic Hospitals**

In 1903, Sir Ernest Cassel placed a sum of £40,000 at the disposal of Lord Cromer for ophthalmic relief in Egypt. The form



that the relief took, by the advice of a committee presided over by Sir Horace Pinching, K. C. M. G., the director general of the Department of Public Health, was the establishment of a Travelling Ophthalmic Hospital, and I was brought out to organize and administer it. This hospital was subsequently increased by the addition of a similar hospital, both under my general superintendence.

These hospitals became a definite branch of the Egyptian Government service in 1906, in which year the first permanent hospital was built at Tanta. In the next year a hospital was built at Assiout to which the inhabitants of the province contributed a sum



Luxor—Eleven cataract patients. The operation for removal of cataract (extraction with iridectomy), performed on all these patients on March 20, 1910; at date of writing, March 30, 1910, all are progressing satisfactorily.

of £5,000 and last year a similar sum was given by an Egyptian gentleman for the erection of a permanent hospital at Mansura.

The Ministry of Finance has undertaken to maintain ophthalmic hospitals, built by private effort, on approved plans in the capital provincial towns, if they are handed over to the control of the ophthalmic section of the Public Health Department.

This very valuable undertaking was obtained by Mr. Graham, the present Director General of the Department of Public Health.

It is too much to expect that an immediate provision could be made for the maintenance of a complete system, but we have the active sympathy of Sir Eldon Gorst, K. C. B., the British agent,



Eleven cataract patients for whom operations were performed March 29, 1910.

and of Mr. Paul Harvey, C. B., the financial adviser to the Khedive, and we hope in the course of time to give effect to a complete scheme.

The *laissez-aller* attitude of the majority of the Egyptians as regards the suffering from eye diseases, which they are so accustomed to, makes it improbable that any comprehensive effort will be made by the Egyptians themselves.

Some financial assistance has been received from some American and English visitors to Egypt, though not in sufficient amounts to produce any great result.

### **Project for a Complete Ophthalmic Organization.**

A complete scheme of ophthalmic relief in Egypt means the provision in each of the fourteen provinces of a permanent hospital in the capital town and of a complete traveling hospital to tour the districts of each province. There should be in addition a complete hospital of flying columns in every province, each consisting of two or three tents in charge of a single surgeon; these would visit the more remote districts and smaller villages.

Each of these elements would have a well-defined function.

The flying columns would only treat Trachoma and conjunctival affections and should preach a propaganda of ophthalmic hygiene. No operation, except scraping or expression of the lids for Trachoma would be performed, these would be sent to the traveling or permanent hospital, whichever happened to be nearest. The two flying columns would be located an hour's journey by road from one another and would be worked by a single surgeon, who would do clinical work at one hospital in the morning, say from eight o'clock until ten or eleven o'clock, and at the other from three o'clock till five or six o'clock, riding from one to the other.

The flying columns would remain not more than three months at each camping ground.

The travelling hospital would work at a considerable distance from the permanent hospital of the same province, staying in each place at least six months.

All kinds of ophthalmic surgical work would be carried on, except the more serious cataract and orbital tumor operations, which would be sent to the permanent hospital.

The permanent hospital would act as a base for the traveling hospital and for the flying columns. It would receive all the more important operative cases and any cases of exceptional clinical

interest met with in the province; these would form clinical material for teaching purposes, and one of the most important functions of the permanent hospital should be that of a center of ophthalmic instruction for post-graduate students.

The cost of building each permanent hospital would be, at the lowest possible estimate, £5,000, and the cost of equipment £1,500. Three permanent hospitals having been already provided, the cost of these items for the remaining eleven provinces only remains.

The cost of equipment and first installation of each complete camp hospital is £1,000. Two being already in existence, the cost of the remaining twelve hospitals would be £12,000. Twenty-eight flying columns at £500 each, would cost £14,000. Giving a grand total of about £100,000 or half a million dollars.

The upkeep of this organization at the rate of £2,000 a year for each permanent or complete camp hospital and £1,000 a year for each flying column would be about £75,000, or less than four hundred thousand dollars. This, of course, is in addition to the present yearly expenditure which is about fifty thousand dollars.

### **Postscript on the Stages of Trachoma**

A division of Trachoma, at any rate as the disease exhibits itself in Egypt, into four stages greatly facilitates our conception of its clinical course and of the treatment which is indicated.

The classification depends upon the comparative prominence of the three features, granulations, papillary hypertrophy and connective tissue formation.

Trachoma is a condition of the mucous membrane of the eyelids, in which gross changes occur, resulting in the formation of so-called granulations (with or without a papillary hypertrophy), which in favorable cases disappear and are replaced by connective tissue.

Trachoma I is the beginning of the disease, and Trachoma IV is its end, when a cure has resulted (either naturally or by treatment).

*Trachoma I* is well described by Hourmouziades: "One finds on the conjunctiva of the tarsus and of the superior cul-de-sac, especially at the two extremities of the tarsus, slight roughness, forming grayish or grayish-yellow islands which are semi-transparent and almost avascular, with small blood vessels converging towards them. These roughnesses generally resemble grains of sago. There may or may not be a mucous discharge."

The simple form lasts a variable time, sometimes as long as a year, but after the development to a certain degree of the granulations, the conjunctiva becomes more vulnerable and complications with species of conjunctivitis other than Trachoma usually occur.

This form may pass into Trachoma II, or in favorable cases or cases which have been treated, into Trachoma III or IV.

*Trachoma II.* In Trachoma II, there is usually a discharge and it is in this stage that the disease is especially infective. It is the stage in which granulations are numerous and large, or in which a papillary hypertrophy is present. It may be divided in the above sense into Trachoma IIa, and Trachoma IIb.

*Trachoma IIa.* Gelatinous granules are present all over the tarsi and in the upper fornix. In some cases the individual granulations can no longer be distinguished, they fuse into tumor-like masses or merge into a general infiltration, the tissue assuming a peculiar glassy gelatinous appearance.

*Trachoma IIb.* There is formation and hypertrophy of pseudo-papillæ, consisting of red raspberry-like elevations, which mask more or less the typical gelatinous granules. This papillary form, as it is called, is specially marked on the upper tarsus. This form may easily be mistaken for spring catarrh, and for a condition occurring as the result of any long-continued irritation or of a protracted attack of purulent ophthalmia in non-trachomatous eyes.

*Trachoma III.* In this stage cicatrization has definitely begun, and is more or less advanced. Islands of inflamed conjunctiva or of trachomatous granules are seen to be surrounded by a network of fine lines of connective tissue. It is in this stage that necrosis often results from the pressure of the shrinking connective tissue (post-trachomatous degeneration). The necrotic tissue may become calcareous. The cicatrization, which is typical of this stage, is generally supposed to be pathognomonic of Trachoma, this statement, however, is not strictly true.

*Trachoma IV* is a condition in which there is a smooth conjunctiva seamed by white lines of connective tissue. This is the stage of practically complete cicatrization of the conjunctiva or of cured Trachoma.

I am aware that there are many cases which cannot be definitely stated to belong to one or other category, for instance a case may be between Trachoma II and Trachoma III or between Trachoma III and Trachoma IV. But it is my experience that for

teaching purposes this division of Trachoma is a valuable means of differentiating between its various phases.

By means of this classification of four stages, it is possible to differentiate between the severity of cases of Trachoma, and to gauge the progress during treatment of an individual or group of individuals. Without any classification, it is impossible to obtain more than a general idea of such progress, an idea which is frequently erroneous.<sup>5</sup>

Amongst well-known surgeons to whom I have exhibited patients in the various stages, I may mention Dr. Casey Wood of Chicago, Dr. Landolt of Paris and Professor Greef of Berlin.

The lines of treatment adopted in Egypt are as follows:

*Trachoma I.* Application of silver nitrate solution, 2 per cent, or of perchloride of mercury solution, 1 or 2 per cent, with or without previous scarification.

*Trachoma IIa.* Scraping the granular conjunctiva, with or without expression of the granulations with forceps; subsequent application of perchloride of mercury solution, 1 or 2 per cent. Kuhnt's combined excision operation is done in a certain number of cases where cicatrization of the fornix has already occurred.

*Trachoma IIb* is best treated by means of Kuhnt's combined excision operation, provided the fornix is cicatrized.

Otherwise the treatment is the same as for Trachoma IIa.

*Trachoma III.* The application of copper sulphate stick or of perchloride of mercury solution, 2 per cent, with or without previous scraping of the remaining granules of the cicatrizing conjunctiva.

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## TWO CASES OF INTERSTITIAL KERATITIS AND ONE OF OPTIC NEURITIS TREATED BY EHRLICH'S "606."\*

BY R. DENIG, M. D.,

Professor of Clinical Ophthalmology, Columbia University.  
NEW YORK.

Case 1. L. George, 9 years old. Parents did not give any specific history, except that the four oldest children were prematurely born at 7 months; they were very weak and emaciated and died a few months after birth.

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\*Read before the Ophthalmic Section, New York Academy of Medicine (Oct. 17, 1910).

The patient has always been a sickly boy. On March 28, 1910, his right eye became inflamed, a few days later the left. The boy was first seen by me on April 2, 1910. Diagnosis: Interstitial keratitis of both eyes, the right showing more inflammation than the left. No tubercular history, no other symptoms of hereditary syphilis, teeth normal. In the next few weeks the inflammation grew worse in spite of the usual general and local treatment and patient was finally admitted to the German Hospital early in May, 1910.

Wassermann being positive, injections were started. Locally a paracentesis of the anterior chamber in both eyes was made and repeated 3 times. At the end of 5 weeks patient was discharged unimproved.

Up till September 21, 1910, when "606" was injected, the intensity of the inflammation remained about the same, perhaps it was then a little less in the left eye, but patient could not open his eyes, and when forced open, the eyeballs would fly up rapidly, to seek cover under the upper lids.

Status on September 21st, before the injection was made:

Very marked Blepharospasmus in both eyes. The right eyeball on being forced open, shows deep ciliary injection; there is a dense infiltration and vascularization of the cornea to be seen, covering nearly its entire surface; the pupils can not be made out on account of the corneal opacities; the left eye shows about the same condition as the right, only less pronounced; the pupil can indistinctly be seen; it is small and round in spite of atropine.

Wassermann reaction positive. Injection of Ehrlich's "606" was made by Dr. Kakels on September 21, 1910, at 3 o'clock p. m. At the same time another case of interstitial keratitis was injected.

Case II. G. Ethel, 12 years. No specific history could be obtained. The inflammation of the right eye started on August 14, 1910. Patient was admitted to the hospital on August 17, 1910.

Status on September 21, 1910. The left eye is apparently normal. The right shows typical interstitial keratitis of a milder type; the cornea is only partially opaque, the pupil is dilated and there are a few posterior synechiae present. The eye can not be kept open on account of blepharospasmus. Besides her eye trouble, patient suffers from a syphilitic periostitis of both her legs and her teeth show the regular Hutchinson type. Wassermann positive before injection.

September 23, 1910: On entering the ward, 2 days after the injection with Dr. Kakels and Dr. J. Bullinger, we were very much astonished to see Case II sit up in bed without an eye-shield, keeping the affected eye open, apparently without any effort. The examination showed that the inflammatory symptoms had nearly entirely subsided, there was a slight injection still to be seen on the nasal side, but the eye was white and the blepharospasmus had gone.

Case I showed also an astonishing improvement. The boy still wore his dark glasses, because there was a very strong sunlight in the ward, but on being told to take them off and to open his eyes, he did so without any effort. He could not keep them open very long but it was easy now, for the first time since months to make a thorough examination of his cornea. The injection had nearly entirely disappeared, there was some slight irritation still present, but the infiltration seemed to be less and also the vascularization. The boy and the girl both stated that they see much better, probably because the blepharospasmus had nearly entirely gone. As atropine was discontinued—by a mistake—after the injection, the pupils were not dilated, but they could be made out a little better.

The nurse, who attended our two little patients made the statement, that an improvement in the condition of the eyes could be first seen about 27 hours after the injection.

Sept. 25th. Case I. Infiltration is less dense, the periphery of both corneae is clearing up. The pupil of the left eye shows posterior synechiae down—in—and upward but is slightly dilated outward. The right pupil is small and round as before. The boy sees much better.

Case II. Improvement continues: the corneal opacities are less and the sight is better still.

In the following weeks the patients were seen from time to time: there is still some slight photophobia present, probably on account of a choroiditis, but the corneae, though still showing opacities, are much clearer, and the eyeballs are white. Wassermann was made at regular intervals and is still positive in both cases. Before summing up these 2 cases, I would like to report a third one, which I saw through the kindness of Dr. J. Bullinger and Dr. N. S. Kakels. As the case is going to be reported by Dr. Kakels in extenso, I simply wish to refer to his eye symptoms.



P. Henry, 35 years. The syphilitic infection took place about 3 years ago. At the time before the injection he showed some of the worst symptoms of secondary and tertiary syphilis refractive to mercurial and iodide treatment. The patient was injected with Ehrlich's "606" on September 7, 1910. He was first seen by me on September 11th at 12 p. m.

History: The right eye has always been poor, ever since patient can remember (congenital amblyopia). The left has been his good eye, but in the last few weeks he can not read his paper any more. The pupils are round, about 4 mm. wide, and react promptly to light and accommodation, there is no difference in size. Muscles normal. Field of vision normal.

The ophthalmoscope reveals a haziness of the vitreous of the right eye, both optic nerves are hyperaemic and swollen especially the right, the outlines are blurry and the retinal vessels show a very pronounced dilatation and congestion.

Diagnosis: Optic Neuritis R. C. L. (Choked disc?)

Sept. 18th.—11 days after the injection—the haziness of the vitreous of the right eye has disappeared, the swelling of the optic nerves seems to be somewhat less, the dilatation of the blood vessels is still very marked.

Sept. 25th.—18 days after the injection. Since 5 days patient is able to read his paper again. The ophthalmoscope shows a very marked decrease of the swelling of the optic nerves and a pronounced reduction of the congested blood vessels, especially in the left eye.

The last examination of the fundus was made about a week ago. The optic nerves were still hyperaemic, but the swelling still less, while the size of the blood vessels had not become normal yet. At the same time his general condition had improved marvelously.

There are only a very few eye cases reported in the German literature. Glück injected a case, suffering from iritis: On the second day the blepharospasm had gone and on the fourth the inflammation had entirely disappeared. In another case of interstitial keratitis in a young woman—25 years old—the cornea began to clear up on the second day, but "the cornea was not clear yet, when the patient was discharged on the 21st day." I do not think, that this can be expected.

In a third case—iritis in both eyes—the inflammation was not so quickly influenced by the injection, it took 3 weeks to cure

it. Patient was discharged with posterior synechiae in both eyes.

Iggersheimer observed a case of interstitial keratitis in a child.

"Wassermann became negative, but the corneal process was not influenced by 606."

Auscherlek injected a case of acute choroiditis; after the injection the choroidal process did not make any further progress; he also injected a case of gumma of the retina; within 10 days the gumma, which had protruded about 1 mm. above the retina, disappeared.

Michaelis saw 4 cases of secondary syphilis of the brain with choked disc.

In Case I the choked disc disappeared after a month. In Case II the patient regained his sight and was able to read again. Case III improved very much after the first injection of 0.3 g. Two months later the headaches came back again, but after an injection of 0.4 g. all the symptoms vanished.

Case IV withdrew from further observation.

Wechselmann reports a case, observed by Fehr in Berlin, of a paralysis of the sixth nerve: "the reaction of both pupils was very much reduced to light. After 5 days the function of the sixth nerve returned and the reaction of the pupils was much better."

There are some more favorable cases on record, for instance one of an ulcer durum of the conjunctiva, but there are also others where the injection did *not* influence the inflammatory process.

As the cornea does not contain any blood vessels, I think, that cases with a dense vascularization of the cornea may respond quicker to the injection. This would explain why Case I reacted quicker than Case II, which showed less vascularization, though it was a much milder form of interstitial keratitis.

As all our three cases had had mercurial treatment, before the injection was given, it seems to me that this may have paved the way to their rapid recovery.

A number of cases of locomotor ataxia and of paresis were injected, without much result, in some cases the atactic symptoms were said to have improved. Furthermore, cases of simple atrophy of the optic nerve were treated with Ehrlich's "606," but no improvement took place. I wonder how decayed nerve fibres and

ganglia can be expected to respond to the treatment, or any cases where secondary degenerative changes have taken place.

Four or six days after the injection no arsenic can be found any more in the body. The full effect of 606 is observed as a rule about 4 weeks after the injection. In the first few weeks Wassermann remains usually positive, although no spirochaetae may be found. After 6 to 8 weeks Wassermann often is negative, which would show that all spirochaetae have been killed. Relapses are due to spirochaetae which were not reached by "606."

Virulent spirochaetae have been found in syphilitic efflorescences of the skin years after they had healed up. Among the overwhelming number of admirers of the new remedy there are a very few that are skeptic about it. It is said that injections of "606" have not such a lasting effect as the ordinary mercurial treatment. On the other hand it has been found that in hereditary syphilis in children Wassermann remains always positive after a regular mercurial treatment, while it gets very often negative after the injection of "606."

As in a number of cases the injections have to be made repeatedly and larger doses have to be taken, it seems that "606" involves more danger for the patients than mercury in consideration of its very poisonous character and it seems to lose its powerful action.

There are some indications that "606" exercises some toxic influences on the nervous system, like those observed in acute arsenic poisoning. Some patients have died after the injection, others become comatose; in some of those accidents the nervous system was intact, in others it was diseased. In a few cases of spinal syphilis the disease becomes much worse. Paresis of the peroneus, disturbances of the sphincter vesicae, of the rectum, of the reflexes are on record, which seems to show that severe cases of syphilis of the nervous system should not be injected. It is contended that even very strong injections of calomel are not as poisonous as "606"; while, on the other hand, as regards spirochaetae and Wassermann, calomel holds its ground.

This all shows that "606" should not be used indiscriminately. It should be used where mercury is of no avail, or where there exists an idiosyncrasy against it, or in cases where much depends on getting, if possible, an immediate result.

Neisser recommends mercurial inunctions after the injection

with "606," and then again a final injection, in order to kill off all spirochaetae. Although it is premature to make any suggestions, it occurred to me that it may be wise, in some cases, to start with mercurial inunctions first, for a period of about 4 weeks, and then make an injection.

As regards the little boy I presented to-night, I wish to add that Dr. Noguchi made an examination of the blood of his mother and of his younger brother, who enjoy apparently the best of health, and found in both Wassermann positive.

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### THE ATTACHMENT OF THE TENDON AFTER ADVANCEMENT.

DAVID W. WELLS, M. D.

BOSTON, MASS.

At the St. Louis meeting of the A. M. A., Dr. E. C. Ellett said in discussing Dr. Hulen's paper:

"It has been demonstrated recently that in these operations where the tendon of the muscle is advanced you do not advance the true attachment of the muscle at all. The muscle attaches itself solidly to the globe from the point of the new attachment clear back to where it was cut from the sclera, and the true new point of attachment is the old point of attachment. You have merely shortened the muscle. If that is true, and it has been demonstrated anatomically to be true, it seems to me a great deal would be gained by abandoning this scleral anchorage altogether and fastening the stump of the cut muscle at the site of the original insertion, which is very much easier to do."

After reading this in the journal, I wrote to Dr. Ellett for his authority for the statement and received the following reply:

July 14th, 1910.

Dr. David W. Wells,

Boston, Mass.

Dear Doctor:—In reply to your letter of July 11th, after I came back from St. Louis I tried to find the article which I had in mind when I spoke in the discussion of Dr. Hulen's paper, but I have so far been unable to lay my hands on it. In fact, I had such a very short time to look it up that I was compelled to let the discussion go as it appeared, and I have not since looked further for it. I am under the impression that it was in the *Ophthalmoscope*, and in the shape of a review of a case, and not an original

article, that I saw the matter to which I referred. I will look again for this reference and if I succeed in finding it will let you hear from me.

Yours very truly,

DR. E. C. ELLETT.

Having been a follower of Landolt and Worth, I submitted the question to the former, and publish the reply with his consent.

4 Rue Volney, Paris.

August 21, 1910.

Dear Dr. Wells:—

In answering your very kind letter of the 4th inst. I may say that, since I have practiced advancement of the muscles of the eye (my first publication on this subject was in 1878), I have had abundant opportunities of studying how the muscles become attached to the globe after *advancement* as well as after *tenotomy*.

When I used to operate for squint according to the method I was taught by my masters—to whom I am otherwise so much indebted—I had more than once to correct my interference by searching after a tenotomised muscle, in order to fix it again at its normal place. And, since I have found the right way of operating, innumerable occasions have been given to me to study this question on patients who had undergone tenotomy or insufficient advancement elsewhere.

If advancement is executed correctly, and the patient kept with both eyes bandaged, quietly in bed for seven or eight days, the new insertion takes place very near the cornea. Thus you obtain the excellent results I speak of in many of my later publications: Total correction of very high degrees of squint, and re-establishment of normal binocular movements, without tenotomy, but simply by advancement and resection of both *externi* in *convergent*, both *interni* in *divergent concomitant strabismus*, and the same by advancement of the paretic muscle in *paretic strabismus*.

When the so-called advanced muscle becomes reattached to its old insertion, there must be an error in the operative procedure, and a favorable result cannot be expected. Such cases furnish, of course, no argument against my method. It is as if some one would argue against cataract-extraction, who does not succeed in getting the lens out of the eye.

You are quite right: how could muscular advancement give such good results as you and all those—they become more and more

numerous on both sides of the ocean—obtain with this procedure, if the muscle became reattached at its former insertion?

Thanking you for writing to me on this subject. I remain, my dear Wells,

Yours very truly,

DR. LANDOLT.

I trust Mr. Worth will tell the readers of the RECORD if he has had opportunity to determine by dissection the place of attachment.

I submitted to Dr. Ellett what seemed to me good clinical evidence that the tendon becomes attached farther forward, but it is the *anatomical* evidence which must settle the question. If the tendon becomes attached at the old insertion, it is certainly poor surgery to attempt to fasten it farther forward, and the advocates of advancement, to which class the writer belongs, are illogical and should practice tucking or resection.

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## PARINAUD'S CONJUNCTIVITIS, WITH REPORT OF A CASE.\*

GEO. H. MATHEWSON, B. A., M. D.,

MONTREAL.

This peculiar disease of the conjunctiva is of such rare occurrence and so little understood that it is proper that all cases should be recorded.

Parinaud first described the disease, at a meeting of the Ophthalmological Society of Paris in 1889, under the title, "Conjunctivite Infectieuse d'origine Animale." He brought forward a report of three cases which showed the following peculiarities:

(1.) A rather severe conjunctivitis with many reddish and yellowish granulations on the tarsal conjunctiva, which were about the size of the head of a large pin. Besides these large granulations there were smaller very yellow ones. There was considerable swelling of the eyelids, and but little secretion.

(2.) The cornea showed at no time any tendency to take part in the disease.

(3.) The disease was monocular, and the preauricular submaxillary and cervical glands of the same side were swollen and later suppurated.

(4.) There was little pain in either eye or glands.

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\*Read at the Meeting of the Canadian Medical Association at Toronto, June 3d, 1910.

(5.) In four to five months the disease had run its course, leaving the conjunctiva absolutely normal.

(6.) All three of Parinaud's patients were exposed to contact with animals—one was the wife of a butcher, one lived next door to a butcher shop, and the third lived in a house in which there was a storehouse for meat. Since Parinaud first described the disease some fifty odd cases have been reported, the majority from France and the United States, a few from other parts of Europe, some from South America and Mexico, and one from Canada. It is doubtful whether the last case—that of Stirling and McCrae—was really Parinaud's Conjunctivitis, as their patient developed very extensive tuberculosis of the lungs within a few months of the time he was under their care, which makes it very likely that the conjunctival disease was also tubercular, the two conditions being by no means dissimilar. My own case differed little from those previously reported and may be briefly described as follows:

On March 1st, 1908, I was called to see a lady about 33 years of age, who complained that her left eye had been feeling uncomfortable for three days. I found the eyelids swollen and somewhat red and eczematous, as was the skin of the neighboring part of the face. There was a moderate amount of mucous secretion. The conjunctiva of the lower lid and of the bulb was practically normal, while that of the upper lid was greatly swollen and its surface very irregular from the presence of a large number of reddish modules, somewhat like the granulations of trachoma, but less sharp in outline. A little to the outer side of the median vertical line, near the upper border of the tarsus, was a small shallow ulcer about 1.5 mm. by 1 mm. in size. The left preauricular gland was swollen and tender and felt about the size of a hazel nut. I prescribed irrigation with boracic acid solution, drops of argyrol 20 per cent, and had ice compresses applied to the swollen lids and gland. A smear from the conjunctival secretion showed nothing but a few small cocci. Three days later the submaxillary glands of the same side became swollen. I touched the ulcer with 2 per cent silver nitrate every day and it had healed entirely on the eleventh day. The bulbar conjunctiva became markedly oedematous about the fourth day, due, no doubt, to mechanical pressure on the veins in the lids. On the 16th the eye condition was much improved, but the glands were still much swollen and were painful. On the 27th of March

the preauricular gland was about the size of a pigeon's egg and showed fluctuations, so it was incised by Dr. Shepherd. About a drachm and a half of thick greenish pus escaped from the wound. This was stained for tubercle bacilli with negative result. Cultures from it showed nothing but saprophytic bacteria (proteus). The wound healed promptly and the submaxillary glands soon become normal without operation.

On May 4th the eye was seen again and was found to be quite normal.

About the only point in which my case differs from the majority of others is in the fact that there was an ulcer present, this being present in only about 12 per cent of reported cases.

The only animals with which my patient could have come in contact with were three pet cats belonging to her children, which had the run of the house, though she herself disliked them and did not handle them. The literature on this subject and the nature of the disease itself have been thoroughly discussed by Verhoeff and Derby of Boston, and later by Karl Hoor of Hungary, from whose papers I have drawn freely. Verhoeff and Derby, *Archives of Ophthalmology*, Vol. XXXIII, 1904, give abstracts of twenty-three cases, including one of their own. They also describe their exhaustive attempts to discover the cause of the disease by various staining methods, cultures, animal inoculation, etc., with negative results. The microscopic findings of the excised tissue they sum up as follows: The lesion consists essentially of marked cell necrosis in the subconjunctival tissue with extensive infiltration of the latter with lymphoid and phagocytic epithelioid cells. This is accompanied by chronic inflammatory reaction of the deeper tissues leading to the process of organization and the production of new fibrous tissue.

Karl Hoor (*Klinische Monatsblätter für Augenheilkunde*, Vol. XLIV, 1906) gives a study of forty-four cases, including one of his own. He also failed to find any micro-organism in smears, cultures or tissue. He points out that while the animal origin of the disease is by no means proven, yet in thirty-three cases in which this question was discussed, the observer of the case believed the disease to be of animal origin in twenty-one, since the patient was in frequent or constant contact with animals, meat or animal products, or lived in the neighborhood of meat storehouses, abattoirs, cattle markets, or finally in places where foot and mouth disease



was epidemic. This makes 65 per cent of possible animal origin; 35 per cent not so.

Since Hoor's paper some thirteen cases have been published in various parts of the world, including one from Mexico, two from Uruguay and one from Hungary. The reporter of this last case, Schaltz of Budapest, claims to have found a bacillus allied to that which causes bubonic plague, but this cannot be the cause of all cases or it would not have escaped the observation of the able men who have been working on these cases. The main points about the disease can be summed up as follows:

(1.) There is a severe conjunctivitis with the formation of granulations in conjunctiva and but little secretion which is serous or mucous in character—and never purulent.

(2.) It is in the overwhelming majority of cases monocular.

(3.) The cornea is very seldom attacked and has never been damaged.

(4.) The preauricular submaxillary and sometimes the cervical glands of the same side are involved and generally suppurate.

(5.) In spite of the severity of the symptoms and the prolonged course the prognosis is absolutely good.

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## A NEW OPERATION FOR THE EXTRACTION OF A CATARACT IN ITS CAPSULE.

VARD H. HULEN, A. M., M. D.

Formerly Head of Department of Ophthalmology University of California  
HOUSTON, TEXAS.

That the advantages of removing a cataract in its capsule over the ordinary method are almost inestimable no ophthalmologist will deny—provided the technique of the capsule operation is no more difficult, the trauma to the tissues no greater and the integrity of the eye at no time more jeopardized.

A critical study of the descriptions of present methods of extraction in capsule, the observation of these operations as done by surgeons experienced in them and a small personal experience seemed to me sufficient to exclude the principle of pressure and manipulation of the globe to any extent to extrude the cataract in its capsule. Therefore I have devised and recently in St. Thomas hospital, San Francisco, successfully used in six cases a procedure

on the new principle of fixing the lens by a small vacuum cup and gently lifting out of the eye the cataract while yet contained in its capsule.

The operation was first performed on a patient August 23, 1910, with the able assistance of Dr. E. W. Alexander, a mature senile cataract was extracted from the right eye; a second operation on Aug. 29, quite immature senile cataract O. D.; the third was done Aug. 31, mature senile cataract in an extremely myopic right eye; the fourth Sept. 5, mature senile cataract left eye; the fifth Sept. 7, immature senile cataract, O. S.; and the sixth operation on Sept. 8, immature senile cataract in very myopic left eye. All are progressing satisfactorily at this date (September 14).

The vital part of the vacuum extractor used is the cup; its diameter is 5 mm., the depth 2 mm., the curvature of the cavity

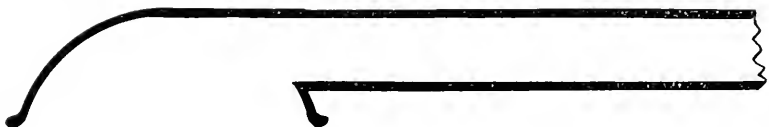


FIG. 1.

is that of a sphere 6 mm. in diameter. The bowl is exceedingly thin and the opening into the stem is made as large as possible, the edge of the ring is rounded and there is a narrow flange to aid in slipping the cup in place under the pupil. Figure 1 gives an en-

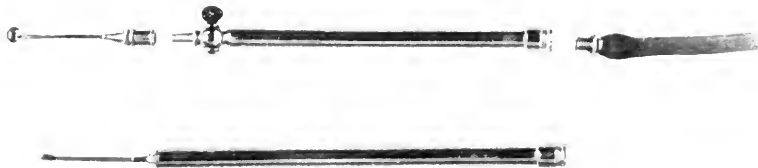


FIG. 2.

larged side view of its outline. In Figure 2 the upper cut shows a side view and the cock is omitted, the handle is, of course, hollow. front view, the instrument disconnected, and with a cut-off to be used by the operator in a possible emergency; the lower cut gives a The necessary apparatus connected up is shown in Figure 3; I have the pump used until the vacuum gauge on the 5-gallon bottle stands at "25."

The operation is done as follows: The preliminary preparations are the same as for an ordinary cataract extraction except the use of atropine in the eye an hour previously. The speculum is in-

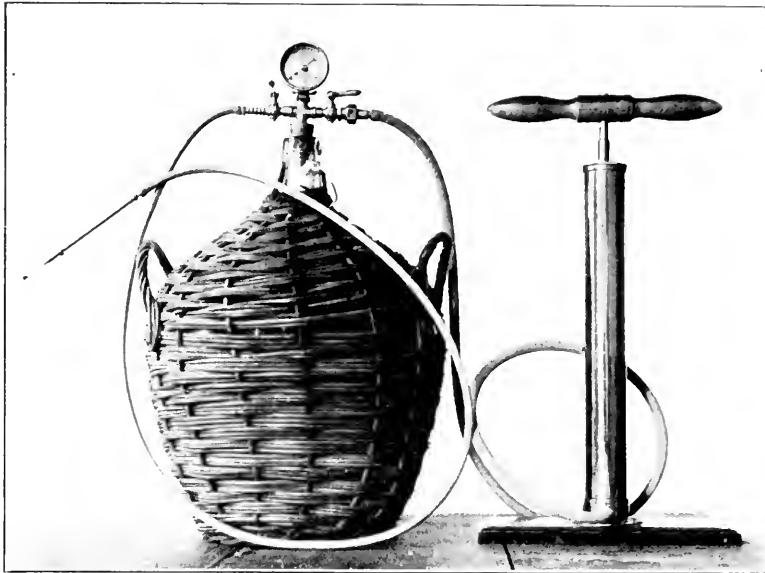


FIG. 3.

produced and the section made in the limbus includes one-half of its circumference, raising a conjunctival flap above, a small iridectomy is done and the edges of the coloboma replaced. The speculum is now removed and a drop of cocaine instilled. Should blood in the anterior chamber obscure the pupil it is removed by a gentle stream of warm saline solution. Next the assistant holds the upper lid with a retractor, controlling the lower lid with the other hand; under no circumstances must he now permit pressure on the globe until the eye is finally closed. The extractor is introduced through the section from the convenient side and gently let down on the lens, making sure the cup is everywhere free of the pupillary margin so that the iris may not be subsequently pinched. The extractor being held in the operator's right hand, the left is free for use as required. The patient should look straight ahead, *never down*. With the cup resting over the center of the anterior capsule the nurse turns the cock at the gauge, the vacuum thus connected will cause the cup to grasp the cataract most rigidly. The extractor is then somewhat elevated and rotated to sever the suspensory ligament; now with the upper edge of the cup slightly raised the cataract in its capsule is slowly and gently lifted out, passing easily through the pupil and section. The edges of the coloboma are re-

placed and the subsequent management of the case is not different from the usual method.

The only unfamiliar manipulation is in placing the cup over the lens and free of the iris, but so far this has not been difficult.



FIG. 4.

Figure 4 shows an instrument I had made carrying the vacuum in its handle, but with the crude vacuum pumps at my present command the suction power is not yet satisfactory.

In the future I plan to use a suture to close the section, as this should be a great advantage, and I believe much more practical with this method of cataract extraction than heretofore. In raising the conjunctiva, when completing the section, I shall stop just short of severing the flap and introduce a fine suture as shown in

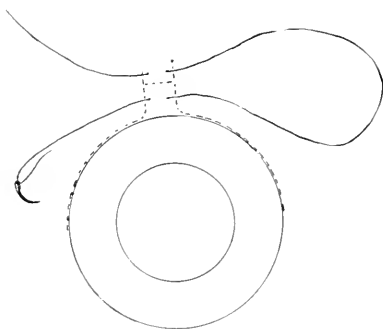


FIG. 5.

Figure 5. Then do the iridectomy, next sever the bridge of the conjunctival flap with one snip of the scissors, then extract the cataract in its capsule as above described and immediately tie the suture. We may now, safe from loss of vitreous, replace the edges of the coloboma with the spatula.

An elaboration at this time of the various points of this operation seems unnecessary, for I wish to report later the results in my present operated patients, and to discuss it if further efforts confirm its advantages over other methods.

To propose an operation for cataract extraction as new may appear too presumptuous, but so far as I know it has not even been suggested to employ vacuum fixation to remove a lens in its capsule.

Sealan Building.

## **Reports of Societies**

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### **AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY.**

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Cincinnati, Ohio, September, 1910.

#### **Advance in Ophthalmic Science in the Past Two Decades.**

Dr. Wendell Reber, of Philadelphia, in his presidential address, spoke on "The Advance in Ophthalmic Science in the Past Two Decades." Dr. Reber said that twenty years ago he was advised by a prominent medical man not to go into ophthalmic science, as since it had been placed upon a mathematical basis it was practically a closed science, worked out to a finality. The speaker then gave a review of the developments in this special science in the time mentioned. He said that in anatomy much had been learned concerning the intricate structure of the lids, the capsule of Tenon, the orbital fascias and supernumerary muscles, the existence of a dilator muscle in the iris, the presence of pupillary as well as visual fibres in the optic nerve, the exact mapping out of the optic and pupillary tracts back of the chiasm, the anatomic relations of the various nerves governing the motility of the eyes, the presence of lymph channels in the orbit, and the new ideas concerning the anatomy of the angle of the anterior chamber. In comparative anatomy much has been done, the work of Lindsay Johnson in England and Casey Wood explaining many formerly obscure conditions.

In the realm of physiology, the exact relation of various cerebral centers to the visual act is now pretty well established. The evolution of binocular or stereoscopic vision has also received great attention. Psychology and ophthalmology have drawn much closer together, especially in the study of muscular troubles. Among conjunctival diseases generally accepted during this period are mentioned vernal conjunctivitis, Parinaud's conjunctivitis, conjunctivitis nodosa and conjunctivitis petrificans. There has been a change in idea concerning the etiology of most of the forms of conjunctivitis, and the speaker prophesied that the day is not far distant when such inflammations will be classified not clinically but etiologically, and one will hear of Koch-Weeks, influenzal, diplobacillary, pneu-

mococcus, diphtheretic and Neisser's conjunctivitis, rather than of acute, subacute, chronic, catarrhal, purulent, croupous or membranous conjunctivitis. The same is true of corneal diseases. The interdependence of much obscure superficial corneal disease and nasal lesions is a development of the past two decades.

As regards the iris, there is a disposition to return to the dictum of Fuchs, that there is no simple iritis, but always a more or less complete uveitis. The speaker fully endorsed the claims of Gifford for the value of the fullest possible dosage of sodium salicylate in all sympathetic uveitis, as the one ray of hope held out in twenty years in the management of these appalling cases, after they have developed; but the past ten years has witnessed the triumph of the exact localization of all penetrating foreign bodies by the X-ray.

While it is regrettable that no advance has been made in the medical treatment of incipient cataract, much progress has been made in the operative management of same.

Knowledge concerning the inflammatory conditions of the orbit has grown with great rapidity.

Continued low-grade choroiditis as the condition antecedent to the formation of incipient cataract is today one of the best accepted clinical facts. Thanks to Sydney Stephenson and George Carpenter, each year sees more cases of tubercular choroiditis brought to report.

The optic nerve has been a field of much progress; retrobulbar neuritis is a well-recognized clinical entity; unilateral optic neuritis is known in many instances to be a focal manifestation, and the relation of optic neuritis to brain tumor brings out one of the most important relations of the ophthalmic to the general surgeon. The decompression operation for the restoration of sight or its preservation is distinctly an achievement of the past decade.

While glaucoma has been a continuous battle-ground, there is agreement as to the part played by autointoxication and the arteriosclerotic process in the production of either inflammatory or non-inflammatory glaucoma. But one is bewildered by the array of operative procedures offered. Thompson Henderson has driven home the valuable point that unless an iris is badly altered anatomically, the cut edges after iridectomy do not heal and filtration thus goes on continuously. Within the past decade the sentiment has grown

against operation in non-inflammatory glaucoma, the feeling being that myotics, properly used, along with good elimination afford the patient the best chance.

Laboratory diagnosis has become each year more and more essential to good ophthalmic work.

The relation between diseases of the eye and those of the nose has at last been clearly defined, also that between ocular and dental diseases. A voluminous literature has accumulated within the past five years as to the intimate relation between diseases of the eye and those of the nervous system. The part played by the eye in the arteriosclerotic process is now more keenly appreciated than ever, and its relation to altered blood pressure fixed. Indeed, the ophthalmic surgeon of today must be a thoroughly trained general medical man, with a special skill in the treatment of diseases of the eye.

In his sociologic relations too, the ophthalmologist is taking his proper place, as shown by the painstaking examinations of children in the public schools.

The peculiar glory of the American ophthalmic profession lies in the proper application of the science of refraction. In searching out this phase of the matter, the author decided to find out approximately what part this academy has taken in assisting in the advance of ophthalmology during the past two decades. It is interesting to learn that of the six hundred and more members, thirty-five are the authors of various text books on the eye, ear, nose and throat: thirty more have taken part in the preparation of various systems on these kindred diseases: sixty are engaged in the teaching of ophthalmic or rhinologic science, and two hundred and twenty-five contribute from time to time to magazines devoted to these allied subjects,—a record to be proud of. Ophthalmic science has advanced every year of the way, not by leaps and starts, but by that gradual accretion of knowledge that is the basis of all final truth. It is still a young science, full of hope, faith and power, rich with opportunities, possibilities and privileges.

#### **Sloughing Corneae in Infants; An Account Based Upon the Records of Thirty-one Cases.**

The anniversary lecture of the Academy of Ophthalmology and Oto-Laryngology was delivered by Mr. Sydney Stephenson, D. O. (Oxon.), of London, England, on "Sloughing Corneae in Infants:

An Account Based Upon the Records of Thirty-one Cases." The conclusions reached were that keratomalacia in young children is known to occur in practically every country whose scientific records are available for inspection. It affects children whose ages usually range from three to twenty months, and is especially frequent in about the eighth month of life. It occurs chiefly in children of the poorer classes, and affects both eyes in about one-half of the cases. It is associated with Xerosis conjunctivae in about fifty per cent of all cases. It occurs only in babies whose vitality has been seriously reduced by "epidemic" or "zymotic enteritis," congenital syphilis, tuberculosis or athrepsia, named in their order of frequency. In London its seasonal incidence closely follows that of zymotic enteritis. Its mortality amounts to about fifty per cent of those affected. The immediate cause of death is usually bronchopneumonia or exhaustion. It leads to blindness in about one-half the children who survive. It is associated with no specific micro-organism, although in scrapings from the cornea the pneumococcus may be found in about one-half the cases.

As to treatment, the first requirement is to place the baby under the best possible conditions for recovery, which is obviously in the hospital ward. The affection is one where careful nursing counts for a great deal. Treatment itself should be both general and local. The former, speaking broadly, is that suitable for marasmus. The giving of alcohol in the form of brandy has proven most useful. Cod liver oil has a distinct value, but where this cannot be retained, a little cream may be substituted. Mori believes that keratomalacia is essentially due to a deficiency of fat. Neatsfoot oil may be substituted as an economical measure. If syphilis is present mercury must be given.

Among antiseptics, argyrol and quinine and hydrogen peroxide have rendered yeoman service. The author places a high value on physostigmine, which assuredly succeeds better than anything else he has used in keratomalacia, unless it be pilocarpine. If the gangrene of the cornea can be mastered, the physostigmine should be replaced by atropine, also in oily solution. During the more acute stages of the disease, the eyes should be kept tied up with a pad and bandage and the utmost care should be exercised in making the necessary examinations, applications, etc. Cases have been reported where the lens escaped from the eyes of babies in attempting



to separate the eyelids. If the eyes are incompletely closed, it is advisable to suture them together. An ulcer will sometimes go on to perforation despite energetic measures, such as scraping and the application of liquified carbolic acid and the use of galvanic and thermo-cautery. It seems as if the vital powers in keratomalacia were at so low an ebb that the cornea is unable to furnish the reaction necessary to healing.

On motion of Dr. Ballenger, seconded by Dr. Murphy, Dr. Stephenson was elected to honorary membership in the academy, whereupon President Reber presented him, on behalf of the council with a medal commemorating the occasion.

### **Parinaud's Conjunctivitis, with Report of a Case.**

"Parinaud's Conjunctivitis, with Reports of a Case," was the title of a paper read by Dr. Geo. F. Keiper, of La Fayette, Ind., who reviewed the history of the disease, discovered and described in 1889 by Parinaud of Paris. It is described as a self-limited unilateral, infectious inflammation of the eyelids, with the formation of large, polypoid granulations on the conjunctival surfaces thereof, together with marked swelling of the glands of that side of the face and neck. Parinaud believed the disease to be of animal origin, but this view is not concurred in by all observers. It is observed most frequently in the autumn, and only in the temperate zones, the sexes being about equally affected, and it is liable to occur at any age. From evidence at present at command, if the disease is due to a bacterium, present means of diagnosis are inadequate. That it is due to an infection there can be no doubt. That it is contagious is very doubtful. Two classes may be differentiated, one with granulations resembling those of trachoma, and the more numerous cases in which polypoid character of the granulations are present. The disease is to be differentiated from trachoma, tuberculosis, syphilis and lymphoma of the conjunctiva of adults. Prognosis is good, the disease yielding readily to treatment and being self-limited. Parinaud recommends nitrate of silver in solution; Gifford used nitrate of copper and a 2 per cent solution of silver nitrate, but there is no agreement as to what is best to be done in treating any individual case; that of the writer was sent to the hospital and given a daily application of a 2 per cent solution of nitrate of silver to the everted conjunctivae, bathing the eye every hour with a very hot compress. Every three hours a 10 per cent

solution of protargol was dropped into the eye, and every hour the eye was flushed with the following:

Zinc phenosulphonat, Gr. j.

Acid botic, Gr. x.

Aquae Dist., Oz. j.

The eye was kept bandaged between treatments and bathings, and internally he was given several purges of calomel, and quinine and iron.

*Discussion.*—Dr. Robt. S. Lamb, of Washington, D. C., reported a case of this disease occurring in his practice, a young man very fond of horses, and driving every day. The case was typical, with swollen lids and glands. Treatment had consisted of copper sulphate, and the internal administration of iron.

Mr. Sydney Stephenson, of London, said that in 1903 Doyne, of Oxford, unfamiliar with Parinaud's idea, published a note regarding a form of conjunctivitis which prevailed in autumn in the neighborhood of Oxford, describing the disease almost in the exact words of Parinaud, and curiously enough, he traced the disease to that known as mange in dogs and animals. Mr. Stephenson said he himself had been consulted several years ago by a famous English gynecologist, who, in opening a uterine abscess, had received a spurt of pus in the eye, which afterwards resulted in this disease. In the treatment of these cases, which are not rare in England, he has followed the excision of the granules with an iodoform ointment, which is efficacious.

Dr. E. J. Brown, of Columbus, Ohio, reported a typical case occurring in a farmer, who in scattering fertilizer over his fields had gotten a bit of this fertilizer into his eye.

Dr. Reeve, of Toronto, said that in the pre-bacterial era he had a case in a girl of twelve, not trachoma, but a severe conjunctivitis in one eyelid, a discharge coming from the subconjunctival region, and a distinct enlargement of the preauricular gland. The case was treated with copper sulphate and argentum, and no relapse occurred.

Dr. Keiper, closing the discussion, said that wherever cases of this rare disease occurred they should be put on record, in order that something definite may be learned in regard to its treatment.

### **The Extractum Corporis Ciliaris in the Treatment of Sympathetic Ophthalmia, with Report of Two Cases.**

“The Extractum Corporis Ciliaris in the Treatment of Sym-

pathetic Ophthalmia, with Report of Two Cases," by Dr. Edw. B. Heckel, of Pittsburg, Pa. He said that organotherapy had its beginning in the very earliest times, man having always used the organs of animals for certain purposes, the lion's flesh to make them strong, etc. It remained for Brown-Sequard to give a new impetus to this very interesting study by his exploitation of his testicular juice, since when organotherapy has become quite common, and the study of it quite complex, the supposition being, of course, that the organ obtained from a healthy animal is capable of supplying something which the diseased organ is no longer able to produce. For a long time, the speaker confessed, it had been his ambition to try ciliary body extract in sympathetic ophthalmia, and during the past year opportunity had presented twice. The first case, a boy of 13, was struck by a piece of broken glass over the closed left eye, same puncturing the eyeball and cutting through the ciliary body. Under the usual treatment the eye made a good recovery. Notwithstanding the admonitions to the parents, the boy returned with a marked condition of sympathetic uveitis, vision reduced from normal to 20/100 in each eye. He was put on large and increasing doses of salicylates for several weeks, but without result. It was then the extract of ciliary body was begun, the extract being injected subconjunctivally 1 c.c. every day: there was no reaction and practically no pain connected with the injections, which were always preceded by a few drops of 4 per cent solution of cocaine. There was no change in the appearance of the eye during this treatment, which was kept up for three months. The vision remained about the same. The final result was that the injured or exciting eye had a better vision of the two.

The second case was an adult for whom the author had removed the exciting eye fifteen years ago and upon whose sympathizing eye he had at the same time done an iridectomy, with the usual result. The ciliary extract was used in the same way and for the same length of time as in case 1, when another iridectomy was done. The resulting coloboma gave him objective vision, but this soon filled with the exudate and again shut out the light. The lens, which was cataractous, was removed, when vision returned, but only for a few days, when the exudate again filled the clear area. The eye now gives some signs of becoming phthisical.

After a fair and persistent trial, the author's conclusion is that the extract of the ciliary body has no therapeutic value.

### Injuries of Ciliary Region.

"Injuries of the Ciliary Region," by Dr. Dudley S. Reynolds, of Louisville, Ky. Dr. Reynolds said that injuries of the ciliary region should include contusions, perforations and lacerations of the sclera, pectinate ligament, iris, Schlemm's canal, the ciliary muscle and nerves, capsular ligament of the lens and the ciliary body, and foreign bodies in the limbus conjunctivalis. The lacerated wounds, with protrusion of iris, ciliary body or vitreous substance are dangerous in proportion to the difficulties of securing early complete closure, with or without excision of the prolapsed or protruding uveal substance. Contusions are more or less dangerous in proportion to the time required for complete absorption of the effused material in the contused part. Recovery from a contusion of the ciliary region must be inferred by the disappearance of the injected area, by contraction of the blood vessels to their normal size, the restoration to normal motility of the pupil, along with absence of photophobia. Contusion of the ciliary region may be attended by no distinctly localized objective sign, yet the eye may subsequently be sensitive to light, with profuse lachrimation and increased tension of the globe. Should these symptoms continue for twenty-four hours, a suddenly developed acute traumatic glaucoma may be recognized. In case of slight contusion the symptoms may all disappear within a few hours, and yet some weeks later gradual dimness of vision come on and the development of a traumatic cataract may be recognized. This, however, is a rare condition. Sympathetic irritation in the fellow eye may come on within ten days, or it may not appear until the lapse of years. The essayist cited a number of instances to show that it is not so much a severe injury to the ciliary region that produces fatal results to vision, but rather the particular structures involved and the definite character of certain well-recognized pathological processes which result disastrously to the patient.

The prognosis of all injuries in the ciliary region will necessarily depend largely upon the existence of cyclitis and its duration. Any case of cyclitis which has resulted in plastic deposit should be viewed as an almost necessarily fatal condition. Dr. Reynolds concurred with those who have advised the enucleation of all blind eyes which have resulted from traumatism, involving the ciliary region.

The papers of Dr. Heckel and Dr. Reynolds were discussed together:

Dr. Bradfield said that in wounds of the ciliary region, the first object should be, so far as possible, to get an aseptic wound with as little traumatism and incarceration of any of the ciliary body as may extrude, and if there is any tendency for the wound to open it should be closed with sutures. He said it is a mistake to attempt to operate, in sympathetic trouble, until the inflammation has quieted down, which is usually in less than one year.

Dr. Streubel, of Lima, said that laymen, and physicians as well, often made the mistake of judging the gravity of the case by the size of the wound, but the fact is that a small puncture from a pin or a tack is more dangerous and will give inflammation where a large wound will not. The prognosis depends on the extent and location of the injury, the age of the patient, and the time in which the case is seen.

Dr. Suker, of Chicago, said that in wounds of the ciliary region he believed that everything that is protruding should be removed and nothing that has been once touched with the forceps ever put back. He believes that it is the long delay in union that gives trouble afterwards, and the first necessity is to close the wound as soon as possible, and if there are inflammatory conditions, follow with enucleation. With a wound in this region, Dr. Suker thinks it bad policy to irrigate, or flush, or try to replace, characterizing all such measures as "meddlesome surgery." It is not so much the injury as it is the pressure the tissues suffer that give the following dangerous results.

Dr. Valk, of New York, told of a case where a man had returned with an inflamed eye twenty years after the injury, requiring enucleation. When he sees these cases of injury he asks himself if he can restore that eye to useful vision. If not, he will advise the removal of the eye at once.

Dr. Meas, of Columbus, said that he believed with Fox, that the so-called danger zone is much over-estimated, as he had seen wounds in other portions of the eyeball producing just as grave irritation as those in the ciliary region.

Dr. Vail, of Cincinnati, said it should be borne in mind that in dealing with this subject there are two distinct classes of cases: the true sympathetic ophthalmitis, which is a true inflammatory

infection, having its beginning in some mysterious way, an injury in one eye manifesting itself in the other eye, which has been proven a pan-ophthalmitis, an irritation involving the whole sympathizing eye. The other type is that which comes on remotely in the history of the case, and which should be classified as sympathetic irritation. In this the sympathizing eye never becomes red and sore, there is never an inflammation of the retina and ciliary, but floating opacities, etc., are seen in the good eye alongside an injured eye, which perhaps harbors a foreign body. While these cases give anxiety to the patient, they are not to be classified in a serious sense with the first type. Dr. Vail said that there has never been reported the history of a case that developed before ten days, and never later than seven weeks, and with this as a working rule one can temporize at least three or four days, giving the eye time to recover from the temporary shock: but all cases should be kept under strict surveillance for seven weeks before they are turned loose.

Dr. Lamb, of Washington, D. C., said that each of these cases is a law unto itself and to be decided on its own merits and with the experience of the man seeing the case. All cases in which iron or steel has entered the eye and set up a chemical process are much more dangerous. A number of these cases may well be temporized with, provided the patient is kept under strict observation.

Dr. Lichtenfeld said that in his opinion the irritation was the initial step of the infection.

Dr. Dayton, of Lincoln, Neb., said he was convinced that no injured eye that is sightless should be allowed to remain in the orbit.

Dr. Heckel, closing discussion, said that he believed the best way to cure sympathetic ophthalmia is to prevent it, and that an injured eye should be removed before it becomes an exciting eye. He believes it is a specific infection which has a selective action for the ciliary region. He said he had seen few cases of sympathetic ophthalmia. What he terms sympathetic ophthalmitis is not an infection at all.

Dr. Reynolds said that in closing the wound the clipping off of any protruding part of the choroid or ciliary body will be followed by complications.

### The Conjunctival Tuberculin Test.

"The Conjunctival Tuberculin Test," by Dr. Herman J. Achard, of Chicago. The conclusions the essayist drew were that the conjunctival tuberculin test as proposed by Wolff-Eisner and Calmette is of undoubted value for determining the existence of an active tuberculous process and may be, to a certain degree, of prognostic value. The test affords valuable information as to the possibility of discontinuing specific treatment and as to the accomplishment of a cure. In selected and indicated cases the method is a valuable one; but all this with the proviso that the test should be carried out by physicians who have carefully studied the problems involved, who are fully aware of the possible dangers and are able to, if not prevent, cope with them, and with the further proviso that all contraindications and precautions should be duly considered. In the majority of cases, the essayist holds that a diagnostic method that is productive of a very real, even if slight amount of discomfort and which has an intrinsic possibility of danger should be employed only after all other methods of ascertaining the existence or absence of tuberculosis have failed. There was so many other methods of examination, more especially the careful consideration of the history of the patient, of his physical condition, of his environment, the conditions under which he lives and has lived, etc., that the conjunctival test should become necessary only in a very small number of cases, and then should be carried out only under the conditions enumerated.

With respect to the tuberculin test to determine the tuberculous nature of an existing eye lesion, the reaction cannot be interpreted to be an indication of tuberculous involvement of the eye. The experience of Derby has led him to fear the conjunctival test in all diseased eyes, even though the process is healed, and in the healthy eye when there is active disease in the cornea of the other. The possibility of causing serious damage by a single application to an eye which may be the seat of even a low grade conjunctivitis, or to a perfectly healthy eye by repeated instillations, has been fully demonstrated. In addition to the dangers there is an element of uncertainty which nullifies the value of the test. There are other and better methods which have not the risk of serious injury which may attend the ophthalmic test.

*Discussion:* Dr. Keiper, of Lafayette, said that he had been

most enthusiastic on the subject of the tuberculin test when it was first brought out, but this enthusiasm, he confessed, had since waned a good deal. The eye is a valuable organ, and that is the reason that specialists in ophthalmology and life and accident insurance companies pay as much for the loss of both eyes as for the loss of a human life. There are other valuable means of diagnosis, and even in the hands of competent ophthalmologists the instilling of tuberculin has been followed by disastrous results.

### **Etiology, Pathology and Treatment of Concomitant Convergent Squint.**

Dr. Linn Emerson, Orange, N. J., in a paper on the "Etiology, Pathology, and Treatment of Concomitant Convergent Squint," said that since all cases can be at least cosmetically cured, it is a reproach to the profession that this is not more universally known. That the general practitioner has failed to properly instruct the laity regarding this condition is owing to the fact that he himself has not an intelligent knowledge of the disease. After seeing a small child with a squint at a most favorable age for cure by orthoptic measures, it is a source of chagrin that the family does not care to undertake it because it is discountenanced by the family physician. Many practitioners are unaware of the fact that there is any condition present other than the abnormal convergence of the visual axes. The prime cause, a defect in the fusion faculty and the presence of an error of refraction, are little appreciated. In a large percentage of cases there is also lowered vision, due either to suppression of the vision of the eye not used for fixation, congenital amblyopia or amblyopia ex anopsia. In a careful observation of five hundred cases, the speaker had never seen a case in which the fusion sense was not deficient or absent. The rapid development of the fusion faculty after the correction of high degrees of refractive error and the inauguration of fusion training, and also its deterioration in some cases after cessation of proper treatment, point to it as a developmental faculty. A clear understanding of the fact that the deficiency of the fusion sense is the cause of the squint would reconcile all the conflicting theories as to cause of same. One should permit no opportunity to escape for driving home to the general medical profession the fact that no child is too young to begin treatment for convergent squint, and to that end it was urged that all members of the academy should avail them-



selves of all opportunities to read papers and present cases before local, county and state societies. If treatment can be begun before the age of four the prognosis in uncomplicated cases is good. About fifty per cent are not cured because of failure to carry out the treatment, and operation is therefore advised much earlier than formerly. There can be no hard and fast rules as to the operation selected and the time chosen for its performance. While advancement is undoubtedly the safest and wisest procedure, whether it shall be done on one or both eyes can only be decided at the time of operation. Double advancement will not correct all cases, and must frequently be followed by a guarded tenotomy. Dr. Emerson described an operation recently devised by himself, which he called "the split tendon operation," the principal advantage of which is that it can be performed under local anaesthesia, and if, after the operation is completed, sufficient effect is not obtained, as extensive a tenotomy as is necessary can be performed at the same sitting. The immediate effect is the ultimate effect, as there is little probability of stitches pulling out.

*Discussion.*—Dr. Edw. Jackson, of Denver, said that he had been impressed, in going over advancement operations recently, that the profession is in a stage with regard to same that they were with regard to tenotomy thirty years ago, and final judgment on the safety and reliability of these operations must be reserved until it is possible to bring together a list of failures and a list of eyes relieved by such measures.

Dr. Leartus Connor, of Detroit, asked how much of this knowledge in regard to these cases is it necessary to give the family physician, who, because of his lack of knowledge, is not in sympathy with the man who has a complete understanding of such cases.

Dr. Geo. Suker said that the principle of the lever should not be forgotten. The muscle, its insertion, its origin in the globe, constitute the first part. The power arm is the muscle from the origin to the insertion; the fulcrum is the insertion. If you lengthen the power arm beyond the fixed fulcrum, you get power and lever at the same point. He said that any advancement that goes beyond the original insertion of the muscle is not physically right. It changes the power of the lever.

Dr. Willis, of Indianapolis, referred to some material for inducing the fusion exercises, which he had procured from Under-

wood & Underwood, of New York, which had considerable advantage over any others he had seen, in that they were very interesting to the child, having reading matter and maps.

Dr. Reber said that the operator that does not take an account of the rotation of the eyes is defrauding himself of something he should have. The tropometer of Stevens, rightly used, will give much valuable information. One's own experience will tell him whether the operation should be a combined tenotomy or a combined advancement.

Dr. Emerson, closing the discussion, said that he measured little children by retinoscopy, taking the length of the arm as a half metre, with someone holding the child, and using 150 instead of 1. With patience and repeated examinations, approximate and often accurate fittings can be secured. In order to teach the general practitioner, it is a good plan to read papers in the local societies, bring up a series of cases, some just beginning treatment and some well on, and some cured; also show photographs taken before anything is done, telling what could be done, and tell them to send their cases to some man who can do this work and will take pains with it. The school nurse is in a position to do good missionary work of this kind.

### **Progressive Primary (?) Atrophy and Almost Complete Disappearance of the Right Iris.**

Dr. Casey A. Wood, of Chicago, in his paper on "Progressive Primary (?) Atrophy and Almost Complete Disappearance of the *Right Iris*," described an interesting case of his own and referred to two or three cases of others resembling it. While there can be no doubt about the extreme rarity of these cases of progressive atrophy of *all* the layers of the iris, the few instances recorded in literature form a fairly well defined group, so far as the symptomatology is concerned. The patient learns by accident that his iris is disappearing; the surgeon whom he consults discovers sooner or later glaucoma, the patient eventually complaining of some of the symptoms of that disease. The essayist thought that if the patients might be seen early enough, before the iridic atrophy had much advanced, the eye might have been found without glaucomatous signs, his idea being that the filtration angle and the canal of Schlemm

have been very gradually blocked, the latter as a result of irritation and proliferation of its endothelium, and that the end process in both instances is, at first, at least, a quiet, secondary glaucoma. If a quiet, simple glaucoma can bring about a result of this kind, it is strange that so few of them are seen. In his own case there was not the slightest evidence of any central nervous lesion, and he concludes that the so-called idiopathic or spontaneous atrophy of the iris has a varied pathogenesis. It is probable that every example of the disease will be found to exhibit, toward the end of the process, a more or less marked glaucoma, but this is probably only an incident in the progress of the disease, and arises either through obliteration of the sclero-iridian angle, or during the efforts of the ocular drainage system to get rid of the irritating products of the primary disease, and is not an essential part of the atrophic degeneration.

*Discussion.*—Dr. Jackson said he had seen the patient in Dr. Wood's office, and in thinking about it afterwards has been impressed that it was somewhat like that which sometimes happens after a serious injury to the eye in children. Sometimes traumatism results in extensive atrophy, and sometimes in opening in the iris, forming false pupils, even several of them.

Dr. Weyler said that according to the new theory of circulation of the eye, the aqueous is absorbed and disintegrated in the anterior chamber; this will make it necessary to revise the former ideas about glaucoma and intraocular tension. If the theory holds good that the anterior iris surface forms and absorbs the aqueous, Dr. Weyler thought it would hold good in the case presented, that in the atrophy of the anterior layers of the iris this glaucoma would follow.

#### **Unmodified Smith Operation for Cataract.**

In a symposium on Cataract Questions, the first paper, by Dr. Derrick T. Vail of Cincinnati, was accompanied by a lantern demonstration of the "Unmodified Smith Operation of Cataract." Dr. Vail had been working with Major Smith at Jullundur (India) between the dates of September 20 and November 10, 1909, where he was given a rare opportunity to study and observe every point and detail of technique Smith employs in his cataract operation; Dr. Vail had stood beside the operating table making copious notes during ninety-nine operations, had played the role of as-

sistant in over fifty other operations, and had done 350 operations on his own account, keeping careful record. Thirty-seven pictures were shown, all of which will appear in Smith's book on "The Cataract Operation," now in press. Dr. Vail said the results were uniformly good as regards visual results, and good as regards cosmetic results; most of Smith's cases presented up-drawn pupils to an inconspicuous degree, but the cause of same was not adhesion between iris and cornea. Incarcerations and entanglements were the great exception. The corneas were usually very bright and clear, with good vision.

#### **Smith's Cataract Operation.**

Dr. D. W. Greene, of Dayton, Ohio, presented a paper on "Smith's Cataract Operation." Dr. Greene said that the multitude of instruments that have been used and the varieties of technique employed all show that the problem of successfully delivering the lens in the capsule is not a simple one, as it might be if all eyeballs were of the same size, if the cornea always measured 12 mm. or more in its horizontal diameter, if the lens in the capsule always measured 9 mm. or less, if the tension of the eyeball was always the same, if the cataractous lens was always hard or always soft, if the section could always be laid in the same mathematical plane and always be portioned to the eye or body which is to pass through it. Dr. Greene had devised changes in some of the instruments as used by Smith: the double-ended spatula he had replaced with one half as wide at one end; the so-called strabismus hook he had shortened. A Knapp iris repositor is used for replacing the pillars of the iris, with a further modification of silver probe ends by making a hook to a right angle 2 mm. from the tip.

#### **Choice of a Cataract Operation.**

"The Choice of a Cataract Operation," by Dr. W. A. Fisher, of Chicago. Dr. Fisher said that the result which promises the best permanent vision is the one that should determine the kind of operation. There are many accidents that may be prevented, and all of these should, as far as possible, be eliminated. The technique of Major Smith in standing in front of the patient instead of behind, should be followed, no matter what the operation chosen. The loss of vitreous occurring at the time the incision is made, can usually be prevented by discarding all kinds

of speculæ and using a lid retractor. Faulty position of the eye during the extraction of the lens is the cause of many accidents. Some object should be placed on the ceiling for the patient to look at, or, if he cannot see, he should be told to look straight at the ceiling, but never to look down. The essayist said he had devised a capsule forceps that can be used while the patient is looking up, with which there is no danger of dislocating the lens, and if he should suddenly look down, the forceps would be out of the eye without effort on the part of the operator. A preliminary iridectomy should always be done, as it simplifies the operation. This having been performed, the surgeon, instruments, assistants and patient prepared as in any surgical operation, the eye is cocaineized, the lashes cut close to the lid, the lid retractor inserted under the upper lid, and the lower lid held away by the finger of the assistant. The incision is one of the most important steps in any kind of cataract operation. If a good deep incision is made the intra-capsular or any other method of operating can be readily accomplished. If gentle manipulation does not make the lens present so as to be easily expressed, the capsule forceps are introduced closed, from above downward, when they are opened and a piece of the capsule grasped and removed. The lens is now extracted by slight pressure on the lower part of the cornea with the Smith hook. The iris should be replaced if prolapsed and any corticle or capsule fragments remaining in the wound should be removed. The patient is now instructed to close his eyes, the retractor not being removed until after they are closed. Probably fewer complications will follow the least after-treatment. If the patient does not complain it is safe to presume he is getting along well. To make sure that no complication exists and at the same time not interfere with the eye, it is well to remove the outside dressing at the end of the third day, but not to open the eye if the lids are not red and swollen. If all is well no further treatment than a bandage for four days is needed, when the patient is ready for dark glasses.

### **Congenital Cataract.**

Dr. J. E. Brown, of Columbus, O., followed with a paper on "Congenital Cataract." The paper was based on the observation of sixty-six cases in the Ohio State School for the Blind. A table was given, showing what improvement was gained by

operation in each case. In this there was wide variation, from ability to count fingers at  $11\frac{1}{2}$  feet to  $20/20$ , to no improvement. There was nothing in Dr. Brown's personal experience to make him feel that the age of the patient at the time of the operation had anything to do with the final result obtained. It seemed to him, rather, that the degree of vision secured when the pupillary space was freed from opacity depended upon conditions of the nerve and retina which obtained from the beginning. The eye showing congenital cataract is a pathological organ in which the lenticular opacity is simply a manifestation of altered or diseased conditions which obtained in the uvea and other parts of the eye. His experience is that in operating at six, eight or ten years as good results are obtained as in the operations at one, two or three years. He is now governed by the degree of vision in the eye in determining the time for operating. The number of cases in which iridectomy formed the procedure of choice was very small. As the best method to secure a clear pupil Dr. Brown's aim, in beginning the operation, is to first lacerate the capsule freely, a mydriatic having been previously used, and to break up not only the cortical but the nuclear portion of the lens as well, in the hope of getting fairly rapid swelling. As soon as the lens is sufficiently broken up, even if high tension has not supervened, linear extraction is made. After the first escape of softened cortex, it is usually possible to enter with capsule forceps and remove the anterior capsule, and, if present, the small calcareous pyramid, which, if left behind, results in the formation of a dense membrane. After this the remainder of the softened lens material may be easily removed. After securing a clear pupil by discission, in some cases the vision has depreciated, apparently from choroidal disease, and even where reading vision has been secured, it is doubtful if these eyes, even with the refraction corrected, can stand as many hours of close work as do normal eyes without showing deterioration.

*Discussion of the Symposium.*—Dr. Walter R. Parker, of Detroit, said that the best lesson in the papers read, referring to the Smith operation, is that, in extracting the lens, one should not attempt to remove the lens, but rather give his attention to pushing the cornea behind it. That is the whole problem. He said he had for the past several years, in every case of the accepted

operation, instilled atropin, unless contraindicated. If the iris is active and well dilated he tries not to do the iridectomy, but if, after the lens is extracted, there is any tendency for the iris to prolapse, the iridectomy is done later. The speaker thought that the most important change in the last 150 cases has been in the use of the capsule forceps. The lens itself is more easily expressed if there is a large opening in the anterior capsule.

Dr. Reeve, of Toronto, said he believed it was best to instill the cocaine not more than five minutes before the incision. If too long a time before, the healthy tonicity of the eye is reduced. His practice in juvenile cataracts is to do a free dissection of the anterior capsule: then if increased tension does not demand earlier interference, at the end of a week or ten days, linear extraction, incision being made with a narrow Graefe knife of two or three lines in length and one line from the corneal margin, and the lens substance coaxed out. He has never done iridectomy in these cases, which produces, in his opinion, an unnecessary blemish in the eye. Referring to the Smith operation, Dr. Reeve quoted the opinion of Major Dingley, of Oxford, who had done thousands of these operations in India, that it is the coming operation for unripe cataracts. But for Anglo-Saxons, the standard operation, provided the anterior chamber is cleared as far as possible at the time of operation, is probably destined to be the one of choice.

Dr. Valk, of New York, gave an illustration of what he termed the "shoulder incision," there being three complete cuts in the incision, and said that he had learned many years ago from Prof. Knapp that the way to get out a lens was to press steadily on the lower part of the cornea until the lens turns and comes out. He has few dissections and very few complications after the operation.

Dr. Steuber, of Lima, said that in making the incision he likes to get near the limbus. He would fear to undertake the Smith method, as the older operation has proven satisfactory in his hands.

Dr. Young, of Burlington, thought the new operation could not become general because not every man had the suppleness of fingers and facility in operation to do it successfully. The most difficult thing in cataract operation he finds to be the manip-

ulation of the iris, especially in the diabetic with slightly dilated pupils, but he has done the simple operation for years and has the lens come out as smoothly in these as in any others, and there is little reaction. Dr. Young said he had a strong superstition against the preliminary iridectomy, as his cases had been failures. He would not operate on a young child during the teething period.

Dr. Emerson, of Orange, N. J., referring to the use of cocaine, said he had found no trouble since he had adopted the dictum of Savage, "four per cent, four times, every four minutes."

Dr. Byington said he had found some trouble in the "shoulder" incision, especially in old and feeble persons, in that there was some difficulty in the wound closing.

Dr. Sherman, of Cleveland, thought one should never forget that it is a human eye that is under consideration, and the most humane method possible should be adopted. He condemned the Smith operation on this score.

Dr. Keiper thought in operating on an eye when the other eye sees, the patient should be warned that he will not see so well with the operated eye as the good eye, as otherwise disappointment is sometimes felt. He suggested that it is a good plan in operating to drop cocaine into the other eye as well, as it helps the patient to gain better control of himself. Referring to congenital cases, he does not hesitate to operate at any age, as no one needs vision more than a child in the formative stage.

Dr. F. Park Lewis, of Buffalo, reminded the gentlemen of the great difficulty in getting absorption of the lens after needling in a child under one year of age.

Dr. Jackson, of Denver, said that he gathered from Dr. Greene and others who have journeyed to India, and from the writings of the Indian operators, that all agree that mastery of the operation requires an apprenticeship running into one or two or more hundreds of operations done under the master's direction, and it should, therefore, be left to those who have this opportunity.

Dr. Friedenbergl said a 3 mm. incision would do for soft cataracts, in individuals up to 25 years of age, but with a hard cataract a large incision must be made. He is in the habit of using cystotomy in breaking up the nucleus, especially in traumatic cases, when one must be very gentle or vitreous will escape into the anterior chamber.



Dr. Brown, closing, said that the rule should be applied that it is not always the method, but the personal equation and the interpretation of the method which the operator adopts. Many of the congenital cases are manifestations of generations of syphilis.

Dr. Vail said he had in his paper described and illustrated the unmodified Smith operation, as he thought it would be of more interest than to tell his personal ideas on the subject. He heartily endorsed all that Dr. Greene has said and justified him in using certain lines of technique that better suit his hand and the cases he has in this country. The Smith operation should be tried with a reasonable amount of effort, but if the lens does not come nicely, he immediately abandons it and goes to the old operation. The reason for the conjunctival flap is to get the blood vessels to the place where they will filter down. There are clots of blood, which account for some of the dark spots reported after the Smith operation done by others than Smith, but which he avoids by keeping in the cornea.

Dr. Greene, referring to the use of cocaine, said he had a record of a prolapsed cornea, in 1883 or 1884, which he had reported he thought might be due to the use of cocaine, and this, he believed, was the original observation on that subject. He did not advocate the Smith operation for all cases. The ultimate advantage of the Smith operation will be in immature cataracts.

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## THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

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An ordinary meeting of the Society was held at the Medical Society's rooms, Chandos street, W., on Friday, July 8th, 1910. Dr. G. A. Berry, president, in the chair.

Mr. E. A. Dorrell showed an unusual form of cataract, and Mr. W. H. Jessop a new form of lamp. Mr. Arnold Lawson showed two cases, one of which was an unusual variety of macular haemorrhage. Mr. Eason exhibited a case showing massive exudate in the choroid, and Mr. Inglis Taylor tubercular iritis of severe type. Mr. Taylor raised the question of the efficacy of treatment by tuberculin. Mr. Treacher Collins said that when he used tuberculin in small and gradually increasing doses he did not get very good results, but recently he had had one very satisfactory case so treated.

In one patient a nodule had disappeared from both eyes, and there had been no return. Mr. Lawford and Mr. Maitland Ramsey had found benefit from the use of tuberculin. Dr. George Mackay read a note on an interfascicular endothelioma of the choroid situated at the optic disc. At the beginning of the year the patient had a momentary loss of power in his leg, and fell while smoking in the smoking room. A fortnight later he fell while rising from his chair, and lost consciousness momentarily. A week later he discovered that weakness of vision was due to a defect in the right eye; a neurologist found nothing abnormal in his fundi, and ordered iodide of potassium and abstinence from tobacco and stimulants. When Dr. Mackay saw him, he was a full-blooded man of 60 years of age, and was said to have had no cardiac trouble, nor kidney disease. There was no specific history. In his youth he had been noted for his feats of strength. His pupils reacted to light and to convergence, the right a little less than the left. The media were clear, and the tension normal. From his shooting experiences, the patient knew his right eye had good sight until four years ago. Recently he had occasionally had a sensation as if a long hair was touching his eye, and he had also color sensations in the right eye. The left fundus was normal. The disc of the right eye presented a curious appearance, difficult to define until the pupil was dilated with homatropine. That showed the surface of the disc to be elevated by a tumor substance, with adherent vascularisation. The veins disappeared in the disc substance. It was possibly a congenital abnormality. There was a narrow dark ring of pigment, especially towards the macular side. Iodide of potassium, which had been discontinued, was advised to be recommenced, but a month later there was no appreciable alteration. He did not note any dimness of vision. In the test types, he missed those to the left of the midline. Dr. Berry then saw the patient, and confirmed the diagnosis, but desired to see him again in six weeks' time. In order to be safe, Mr. Collins was also asked to see him, and he said there was a new growth in the right eye, involving the optic nerve. Mr. Collins advised that the eye should be removed, and as soon as possible. Since the excision, the tumor was found to be a mixed-celled spindle and round-celled sarcoma, but extending only a short distance into its sheath. Mr. Treacher Collins

described the pathological appearances, and exhibited slides by means of the epidiascope. Mr. J. B. Lawford read a further note on the case of optic atrophy and oculomotor palsy due to intracranial new growth. The patient was a man 40 years of age, who died in St. Thomas' Hospital on May 7th, 1910. There had been a gradual increase of proptosis on both sides, and a large growth between the eyeball and the nasal bone on the right side. The tumor also appeared in the left temporal fossa, and the movements of the lower became restricted. A new growth developed in the roof of the mouth. A few weeks before death, the right cornea began to slough from exposure, and the right fifth nerve became almost completely paralyzed, showing how extensively it had spread. There was headache, and a low delirium, followed by coma, which terminated fatally. Post-mortem the day after death showed that the growth had extended all over the skull and nasal cavity. The olfactory lobe and the optic nerve were involved. The specimen showed a large glistening tumor, lobulated, smooth on the surface, and covered by dura mater. Mr. Shattock examined the growth, and reported that it was a rapidly-growing chondroma. The vision began to fail twelve months before death. Mr. Doyne and Mr. Hewkley discussed the case, and Mr. Lawford replied.

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The Hartford (Conn.) Hospital has received a bequest of \$5,000, in the will of Mrs. Mary Bacon, for the purpose of endowing a free bed for eye and ear cases.

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Dr. Walter E. Delabarre, assistant surgeon on the staff of the New York Ophthalmic Hospital, died October 30 at the Rosemont Springs Sanitarium, White Plains, N. Y., of which he was director.

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Dr. True, professor of ophthalmology in Montpellier College of Medicine, Paris, France, presented a paper in collaboration with Dr. Fleig before the Academie des Sciences showing the effect of dust from tarred roads upon the eyes. They have traced the cause of many ophthalmia, corneal ulcers, etc., to this peculiarly irritating dust.

## **News Items**

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Personals and items of interest should be sent to Dr. Frank Brawley, 12 Madison street, Chicago.

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Dr. S. J. Clark, formerly on the house staff of the Manhattan Eye, Ear and Throat Hospital, New York, has located in Chicago.

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Prof. Dr. Van Reuss recently celebrated the twenty-fifth anniversary of his professorship of ophthalmology in Vienna.

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Dr. E. J. Abbott, an ophthalmologist of Chicago, died recently in that city, aged 51.

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Dr. C. G. Darling of Chicago recently underwent an operation for gastro-duodenal ulcer. He is reported to be doing well.

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The Manhattan Eye, Ear and Throat Hospital, New York, has secured ground for an addition to the present hospital.

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Dr. R. Clyde Lynch, New Orleans, has been elected to the staff of the Eye, Ear, Nose and Throat Hospital in that City.

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In the neighborhood of 1,000 cases of trachoma have been discovered in the school children of Santiago de Las Vegas, Cuba.

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Drs. Eugene Smith and Robert Gillman have been appointed to the staff of the House of Providence Hospital of Detroit as ophthalmologists.

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Dr. William R. Hobbs, an oculist of Omaha, Nebraska, where he was on the staff of the Douglas County and Swedish Mission Hospitals, died October 17, aged 49.

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Dr. Thomas McDavitt of St. Paul was re-elected secretary of the Minnesota State Medical Association at the recent meeting in Minneapolis.











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